

SEALIST

1

**Sequence Protocol****(1) GENERAL INFORMATION:****(i) APPLICANT:**

- (A) NAME: Schering Aktiengesellschaft
- (B) STREET: Müllerstraße 178
- (C) CITY: Berlin
- (E) COUNTRY: Germany
- (F) POSTAL CODE (ZIP): D-13303
- (G) TELEPHONE: (030)-4681 2085
- (H) FAX: (030)-4681 2058

**(ii) TITLE OF INVENTION:** Human Nucleic Acid Sequences from Human Endothelial Cells**(iii) Number of sequences:** 59**(iv) COMPUTER READABLE FORM:**

- (A) MEDIUM TYPE: Floppy disk
- (B) COMPUTER: IBM PC compatible
- (C) OPERATING SYSTEM: PC-DOS/MS-DOS
- (D) SOFTWARE: Patentin release #1.0, version #1.25  
(EPO)

## (2) INFORMATION ON SEQ ID NO. 1:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1835 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

ttttacagtt ttcctttct tcagagttta ttttgaattt tcatttttgataaaccacg 60  
 agctcttaa gaagaatgca cagaagagtc attctggcac ttttggatag tacataagat 120  
 tttttttt ttttttaat ttttttaat agtcacattc agtcgccttgcctaaaccag 180  
 actcccacat tgggtgagca agatgagccc ataggattcc agagttataa cgttaaccgta 240  
 tatacaaaca gccaaaaaac cataatggtg ccacaggat ggagcaggga agggcatctc 300  
 taacgtgtcc tctagtctat cttcgctaaa cagaacccac gttacacatgataacttagag 360  
 agcacactgt gttgaaacga ggatgctgac cccaaatggc acttggcagc atgcagttta 420  
 aagcaaaaga gacatccctt aataactgta taaaatccag gcagttccat taaagggtt 480  
 aagaaaaacc aacaacaacaa aaagcgaggg actgtctgtt gtcactgtca aaaaggcact 540  
 tggagttaat gggaccagga ttggaggact cttagctgat acagatttca gtacgatttc 600  
 attaaaaggc ttggatgtta agagaggaca ctcagcggtt cctgaaggga gacgctgaga 660  
 tggaccgctg agaagcgaa cagatgaaca caaaggaaatc aaatctttac aaccaaattt 720  
 catattaagcg acaacaaaaa aaggcaaaacc cccaaacqca acctaaccac agcaaaatct 780  
 aagcaaaatc agacaacgaa gcagcgatgc atagcttcc tttqagagaaa cgcataacctt 840  
 gagacgctac gtgccaacct aagttctcaa cgacagctt acagtaggat tattgtgata 900  
 aaaatgactc aagcgatgca aaaagttca tctgttccca gaatccggagg gagaactgag 960  
 gtgatcgta gacatcgatcg acatcacgtg cggtttctta atgtccctgg tggcggatac 1020  
 gcccggatccctt cggaaaggaca tctggacacc accttcagcc accttcgttgc agggggcaca 1080

tccggccaaag tcatccttta ttccgagtaa taacttttaat tcctttctaa catttacacg 1140  
 gcaaaacagga atgcagtaaa cgtccacgtc cgcccccacgg ctgggctgccc gttccgttcc 1200  
 ctccacgaac gggtaacgcgc ttccatgaga aaggatattt ggcaatttttataattccacag 1260  
 tcaggtgggt ctgcgatagc tcatttaatg taaaacgcca tcaggggcctt ctcctccctgt 1320  
 ttctgcccagg ggcttttctt gtcttctctt tggcgagctc gtgggcagat ctctctctgg 1380  
 gggggctggc tgctggctcc gagggggcat cccgagtcgg tctggctgctt cccctctgca 1440  
 ggctggggcag ctggccacca ctctccgac tggacccttc caacaaggcat cgcaggccac 1500  
 tgtccctcggtt ggtacagacc gtggcccac attcgcttacc actctgttcc acgtcatcca 1560  
 ggtacacgag ctgcgtgttag gccgtgctgt ctggggctcg aggtcttttgc tgctgtgtct 1620  
 cttggacggg cgggttagttc tgctgcagag acaaaggcat tcccttcccc tccctggctg 1680  
 attttggttc attcatatct acgccagagt ccaaactggc atcattactt ccgtttcccttc 1740  
 cagctctttt gagaatcaat gtatgaatgt ctaacctgac cgttggaccc gccatccaag 1800  
 gagacgaacc acgccccgggg gtgcggaaagc ggcct

## (2) INFORMATION ON SEQ ID NO. 2:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 581 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

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gttctagatt gttttattca gtaattagct cttaaagaccc ctggggcctg tgctacccag 60
acactaaca cagtctctat ccagttgctg gttctgggtg acgtgatctc cccatcatga 120
tcaacttact tcctgtggcc cattaggaa gtggtgaccc cgggagctat ttgcctgtt 180
agtgcacaca cctggaaaca tactgctctc atttttcat ccacatcagt gagaaatgag 240
tggcccgta gcaagatata actatgcaat catgcaacaa agctgcctaa taacattca 300
tttattacag gactaaaagt tcattattgt ttgtaaagga tgaattcata acctctgcag 360
agttatagtt catacacagt tgatttccat ttataaaaggc agaaaagtccct tggggatgtt 420
aaatgtcaag ctttgactga aaactcccgt ttttccagtc actggagtggt gtgcgtatga 480
aagaaaatct ttagcaatta gatgggagag aaggaaata gtacttgaaa tggggccct 540
caccccccac tgacatccctc catgagcctc ctgatgtagt g
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## (2) INFORMATION ON SEQ ID NO. 3:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 516 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

tagagatgtt ggttgatgac ccccgggatc tggagcagat gaatgaagag tctctggaag 60  
tcagcccaga catgtgcata tacatcacag aggacatgt catgtcgccg aacctgaatg 120  
gacactctgg ttgttattgtt aaagaaattt ggtcttccac ctcgagctt tcagaaacag 180  
ttgttaagct tcgtggccag agtactgatt ctcttccaca gactatatgt cgaaaaacca 240  
agacctccac tgatcgacac agcttgagcc tcgatgacat cagactttac cagaaagact 300  
tcctgcgcac tgcaaggatcg ttgtcaggaca ctgctcagag ttacacccctt ggatgtggcc 360  
atgaacttggta tgaggaaggc ctctatgtca acagttgtt ggccccagcag tgcataaca 420  
tccaaatgtgc ttttccatgtc aaaagaacca gcaaataactt ttctctggat ctcactcatg 480  
atgaagtcc agagtttggta gtgtaaatgtc cgtctg

(2) INFORMATION ON SEQ ID NO. 4:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 1099 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual  
ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

ccccacaacac agggggccctg aaacacgcac gcctctcctc tgggtcagc ttggccca 60  
cctgctcaact ggatcacacg ccattgtagg tggggcatgg tggggatcaag ggcccctggc 120  
ccacggggag gtagaagaag acctggtccg tgtaagggtc tgagaagggtg ccctgggtcg 180  
ggggtgcgtc ttggccttgc cgtgcctca tccccccgct gaggcagcga cacagcagg 240  
gcaccaactc cagcaggtt agcaccagg agatgagtcc aaccaccaac atgaagatga 300  
tgaagatggt cttctccgtg gggcgagaga caaagcagtc cacgaggtag gggcagggtg 360  
ctcgctggca cacaacacg ggctccatgg tccagccgtc caggcgccac tggccataga 420  
ggaagcctgc ctctagcaca ctcttgcaga gcacactggc gacataggtg cccatcagtg 480  
ctccgcggat ggcgaggcga ccattctctg ccaccggat ctggccatc tgacgtctca 540  
cggccgcccag cgcccgctcc acctgtgggt cttggccgg cagtgcggc agctccccct 600  
ccttctgcccag cagccgctct tctcgcggag acaggtaaat gacatggccc aggtagacca 660  
gggtgggtgt gctgacgaag aggaactgca gcacccagta gccggatgtgg gagatgggga 720  
aggcctggtc atagcagacg ttggtgcagc ctggctggc cgtgttacac tcgaaatctg 780  
actgctcgtc acccccacact gactcgccgg ccaggcccag gatgaggatg cggaaagatga 840  
agagcaccgt cagccagatc ttacccacca cggtcgagtg ctccctggacc tggtcagca 900  
acttctccac gaagccccag tcacccatgg ctcccgggcc tccgtcggca aggagacaga 960  
gcacgtcagt gtgtcagcat ggcaccccttc tcgttgcggc agcaacaagc ctgcagggtg 1020  
gtctgccacg cccgttctac cgccgtcctg ccggcgccg caggtggagg tggggacgat 1080  
ggccggagtg acgcccgcg

## (2) INFORMATION ON SEQ ID NO. 5:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1015 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

gaggataggg	agcctgggg	caggagtgt	ggagacacag	cgagactctg	tctccaaaaa	60
aaaaagtgt	tttggaaaat	gttgagggtt	aatgtatggg	aaccaacatt	ctttggattt	120
agtggggagc	ataatagcaa	acacccccc	gttgcgcaca	tgtacaggaa	tgggaccagg	180
ttggggcaca	gccatggact	tcccccccc	gaaatgtgt	gtgcaaagt	gggcccaggc	240
ccagacccaa	gaggagaggg	tggtccgcag	acacccccc	atgtcagcat	ccccccgaccc	300
gccttctggc	ggcacctccc	gggtgtgt	ttgagtca	aggcatgggg	tgagagcctg	360
gtatatgt	gaaacaggg	gcaggggcca	agcgttcc	cttcagcc	gacttggg	420
atgcaccccc	tctccccaa	acacaaacaa	gcacttcc	agtatgg	caggacagg	480
gtcccttcag	tcctctgg	atgaccta	gtcctactt	ggccctgcag	cccagcctgt	540
gttgttaac	ctgcgtcc	aagaccac	ctggaaagatt	cttcttcc	ttgaaggaga	600
atcatcatt	ttgttttac	acttctaaga	cattttgt	ggcacgg	agttaaacag	660
aatgtgtt	cctccctgg	gtctcacac	ctcccac	aatgcc	gggcccgt	720
ctgggcaggc	ttctctgt	aacccca	gttgcggccc	agaccac	gtcttgc	780
gagcctagag	cagggagt	cgaacttct	cattcacaga	ccaccc	aattgttata	840
accaaaggcc	tctgttct	ttat	taaatcaaca	tgctat	tttca	900
cttctgactt	tagcctcg	ctgagccgt	tatccat	gtcatgtt	cgtgctag	960
acgttttct	tcttacacat	gaaaataaaat	gcataagt	tagaagaaaa	aaaaaa	

(2) INFORMATION ON SEQ ID NO. 6:

- (i) SEQUENCE CHARACTERISTIC:
  - (A) LENGTH: 2313 base pairs
  - (B) TYPE: Nucleic acid
  - (C) STRAND: individual
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing
- (iii) HYPOTHETICAL: NO
- (iii) ANTI-SENSE: NO
- (vi) ORIGIN:
  - (A) ORGANISM: HUMAN
  - (C) ORGAN:
- (vii) OTHER ORIGIN:
  - (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

ccagagcagg cctgggtggg agcaaggacg qtgcacccgg a cggcgggatc gagcaa atgg 60  
 gtctggccat ggagcacgga gggtcctacg ctcgggggg gggcagctct cggggctgct 120  
 ggtattacct gcgctacttc ttcccttctcg tctccctcat ccaattcctc atcatcctgg 180  
 ggctcggtct cttcatggtc tatggcaacg tgcacgttag cacagagtcc aacctgcagg 240  
 ccaccggacg cccgagccgag ggcctataca gtcagctcct agggctcacg gcctccagg 300  
 ccaacttgcac caaggagctc aacttcacca cccgcgc当地 ggatgccatc atgcagatgt 360  
 ggctgaatgc tgcgcgc当地 ctggaccgca tcaatgc当地 ctccgc当地 tgccagggtg 420  
 accgggtcat ctacacgaaac aatcagaggt acatggctgc catcatctt agtgagaagc 480  
 aatgcagaga tcaattcaag gacatgaaca agagctgc当地 tgccctgctc ttcatgctga 540  
 atcagaaggt gaaagacgctg gaggtggaga tagccaagga gaagaccatt tgcaactaagg 600  
 ataaggaaag cgtgtgtctg aacaaacgc当地 tggcggagga acagctggtt gaatgc当地 660  
 aaaccgggaa gctgcagcac caagagc当地 actggccaaag gagcaactgc aaaagggtca 720  
 agccctctgc ctgccc当地 ggaaaggacaa gtttgagatg gacccctcgta acctgtggag 780  
 ggactccatt atccc当地 ggctggacaa cctgggttac aacctctacc atccc当地 840  
 ctcggatttgc gcctccatcc gcagagc当地 cgaccacatg cccagc当地 tgagctccaa 900  
 ggtggaggag ctggccc当地 ggctccggc当地 ggatatcgaa cgc当地 ggccc当地 gcgagaactc 960  
 agaccccaa cggccagaaac tggaagccca gcagggc当地 cggccagtc aggaggc当地 1020  
 acagaagggt gagaaggagg ctcaggccg ggaggccaaag ctccaagctg aatgc当地 1080  
 gcagacccag cttagc当地 ggaggaaaggc ggtgctgc当地 aaggaacgag acaaccc当地 1140  
 caaggagctg gaagagaaga agagggaggc ggagcagctc aggatggagc tggccatc当地 1200  
 aaactcagcc ctggacacact gcatcaagac caagtc当地 cccatggg 1260  
 gccc当地 cctgtccccc accccc当地 catcgacccaa gctagc当地 aggagg 1320  
 gaggaagatc ctggagtc当地 agaggcccccc tgc当地 cccatggg 1380  
 ctgaggaggc tccaggc当地 aggaccaagg gatggcc当地 ctc当地 cggg 1440  
 gcaggaggat gctcacagc cccgacacaa cccctccccc cc当地 ccc 1500  
 ccaccatcag acaactccct gcatgaaac cccttagtacc ctctcacacc cgc当地 ccc 1560  
 cctc当地 cccatggg 1620  
 ctgacgtcac atatcaccgt ggtgatggcg tcacgtggcc atgtagacgt cacgaagaga 1680  
 tatagcgatg gcgtcgatg gatgc当地 gacatggg 1740  
  
 acgtcacacc gagatgc当地 aacgacgtca cggccatgt cgacgtcaca catattaatg 1800  
 tcacacagac gc当地 cccatgg catcacacag acgggtatga tgc当地 cacacac agacac 1860  
 acaacacaca ccatgacaaac gacacctata gatatggcac caacatcaca tgc当地 cccatgg 1920  
 cccttc当地 cacacttct acccaattct caccttagtgc cccctccccc cgc当地 ccc 1980  
 acacggcc当地 aggtacccac aggatcccat cccctccccc acagccctgg gccc当地 ccc 2040  
 ctcccttc当地 ccagttcttccg ggc当地 cccatggcc当地 accccc当地 ccc 2100  
 gaggtgagaa caggaagccaa ttccaccc当地 ccccttgc当地 gtgagttt cc当地 ccc 2160  
 ctc当地 cccatggg 2220  
 cccccaactc ccagccctgc ctgtggcc当地 ttgaaatgtt ggtggactt aataaatatt 2280  
 agtaaatcct taaaaaaaaaaa aaaaaaaaaaaa aaa

## (2) INFORMATION ON SEQ ID NO. 7:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 389 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

gccaaaaaga tggcttcaaa agtaagaatg aaacatgttga tccattcagc tttaggctat 60  
gccactggat tcatgtctag aaaagatagg ataatttctg taaagaaaatg aagaccttgc 120  
tattctaaaa tcagatccct acagatccag atttcagggaa acaaatacat aggggactaa 180  
ctttccttgt tcagatttagt ttttctcctt tgcaccaggc tatataatat gaggaagtat 240  
tgactttta aaagtgtttt agtttccat ttctttgata tggaaaagtaa tatttcggga 300  
gaaccctgag ctattaataa tctatgtggc tagtgcgat atattggctt gaatttggc 360  
tcctttgtg gtgtccagtg ggtaacatc

## (2) INFORMATION ON SEQ ID NO. 8:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 157 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

## (vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

tgctttaaac agctgtgtca aaaactgaca tcagagagta aattgaattt ggttttgtag 60  
gaagcaggaa gcaagcccac tcaaactgtga aatttggcat gaggatcca gtaactttct 120  
cctcaatctg tgaactataat gtgagtttga tattttg

## (2) INFORMATION ON SEQ ID NO. 9:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 561 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

aatagtcaaa acataaaca aagctaatta actggcactg ttgtcacctg agactaagtg 60  
gatgttgttgcgtgacatac aggctcagcc agcagagaaa gaattctgaa ttcccccttgc 120  
tgaactgaac tattctgttacatatggttg acaaattctgt gtgttatttc ttttctacct 180

accatattta aatttatgag tatcaaccga ggacatagtc aaaccttcga tgatgaacat 240  
tcctgatttt ttgcctgatt aatctctgtt gagctctact tgggtcatt caagatttta 300  
tgatgtgaa aggaaaagtg aatatgacct taaaaatttgc tattttgggt gatgatagtc 360  
tcaccactat aaaactgtca attatgcct aatgttaaag atatccatca ttgtgattaa 420  
ttaaacctat aatgagtatt cttaatggag aattcttaat ggatggatta tccccctgatc 480  
ttttctttaa aatttctctg cacacacagg acttctcatt ttccaataaa tgggtgtact 540  
ctgcccccaat ttcttagaaaa a

## (2) INFORMATION ON SEQ ID NO. 10:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1508 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vi) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

cacaaaacacg agagactcca cggctctgcct gagcaccgccc agccctccctag gtcggcggc 60

tcgcagggtcc attcttctgc acgagccctc ctgtccagat ccataagcac ggtcagctca 120  
gggtcgccga gcagttacgag gacaagtacc agcagcagct cctctgaaca gagactgcta 180  
ggatcatcct tctcctccgg gcctgttgc gatggcataa tccgggtgca acccaaactct 240  
gagctcaaggc caggtgagct taagccactg agcaaggaaat tttttggccct gcacgcctac 300  
agggtgtgagg actgtggcaa gtgc当地atgt aaggagtgca ctttacccaaag gcctctgcca 360  
tcagactgga tctgcgacaa gcagtgccct tgctcggccc agaacgttat tgactatggg 420  
acttgtgtat gctgtgtgaa aggtctcttc tatcactgtt ctaatgatgat tgaggacaac 480  
tgtgtgtgaca acccatgttc ttgcagccag tctcactgtt gtacacgatgat gcagccatg 540  
gggtgtcatgt ccctcttttt gccttgc当地 ttgtgttacc ttccagccaa ggggtgcctt 600  
aaattgtgcc aggggtgtta tgacccgggtt aacaggccctg gttggccgctg taaaaactca 660  
aacacagttt gctgcaaagt tcccactgtc cccctctagaa actttgaaaa accaacatag 720  
catcattaaat caggaatatt acagtaatgaa ggattttttc tttttttttt taatacacat 780  
atgcaaccaa ctaaacagtt ataatcttgg cactgttaat agaaaagttgg gatagtcttt 840  
gctgtttgcg gtgaaatgtt ttttgc当地 gtgccc当地ttt aactgatatgat cttgttagaa 900  
ctcagctaat ggagctcaaa gtatgagata cagaacttgg tgaccccatgtt attgcataag 960  
ctaaagcaac acagacactc ctaggcaaaag ttttgc当地tgg tgaatagttac ttgcaaaact 1020  
tgtaaattag cagatgactt ttttgc当地tgg ttttctccag agagaatgtt cstatatttt 1080  
gtatatacaa taatattttgc aactgtgaaa aacaagtggt gccatactac atggcacaga 1140  
cacaatataat tataactaata ttttgc当地tgg tggaaagaat gtgaatcaat cagtatgttt 1200  
tttagatgtt ttttgc当地tgg cagaaaggctt ttattgttaag actctgattt cccttggac 1260  
ttcatgtata ttgtacagtt acagtaaaat tcaaccttta ttttcttaatt ttttcaacat 1320  
atgttttagt gtaaagaata ttttgc当地tgg gtttttattat ttataaaaaa agaatattta 1380  
ttttaagagg catcttacaa attttgc当地tgg ttttatgagg atgtgatagt tgctgcaaatt 1440  
gaggggttac agatgcataat gtccaaatata aatagaaaa tatattaacg tttgaaattta 1500  
aaaaaaaaaa

## (2) INFORMATION ON SEQ ID NO. 11:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 389 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

gggcaggta tcagggcaca cattccccgt ccattgagac agtagcattc ccggcaccca 60  
tcgtccagc ttcctcatt tttatgtga tgaccatcca cggtagagaca agtgccccgac 120  
aggatgggtg gcccagctga agcacaggcc gctctgcact tgcagataag acagccgtga 180  
ctgtccctgct gaaaacccaa ggggcagatc ttactgcattt agagctctgg acattttctta 240  
cagcgcacaga tgtcacagcc gtgcatttc ttcaatc caagtggaca atacttgtca 300  
cagattatgg gtctgcactt cttgggcctt gggcggcaact cacagatctc acagttttgg 360  
acctcggccg cgaccacgct gggtaaccga

## (2) INFORMATION ON SEQ ID NO. 12:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 981 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

## (vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

tttttttttt ttggattgca aaaatttatt aaaattggag acactgtttt aatcttcttg 60  
tgccatgaga ctccatcagg cagtctacaa agaccactgg gaggtcgagg atcacttgag 120  
cccagaagtt tgaggctgta gtaagcttca aaggccactg cactctagct tgggtgaggc 180  
aagacccttt caagcagtaa gctgcgtct tgcttgtgt gtcattaaa aaccctagtt 240  
taggataaca acatattaat cagggcaaaa tacaaatgtg tgatgcttgt tagtagagta 300  
acctcagaat caaaatggaa cggttttaca gtgatatcat tatatttcat ttggcagaat 360  
cattacatca ttggttacac tggaaatcat cacatgtacc aaaagctgac tcacctagtt 420  
taggataaca ggtctgcctg tttgaagatg aaaataata cccattttaa atttgcctta 480  
ctcaatttcc ttctcagta cattttact tttaaacagc taatcactcc catctacaga 540  
ttaaggtgtt tatgcccacca aaaccccttgc ccaccttaaa aatcccttc aaagttaaa 600  
ctaattgcctg catttttca atcatgaatt ctgagtccctt tgcttcttta aaacttgctc 660  
cacacagtgt agtcaaggccg actctccata cccaaagcaag tcatccatgg ataaaaaacgt 720  
taccaggagc agaaccatta agctggtcca ggcaagttgg actccaccat ttcaacttcc 780  
agctttctgt ctaatgcctg tggccaatg gcttgaggtt ggcttgctct ttaggacttc 840  
agtagcttattt ctcattccctt cttggggaca caactgttcca taaggtgcta tccagagcc 900  
cactgcatct gcacccagca ccatacctca caggagtcga ctcccacgag ccgcctgtat 960  
ataagagttc ttttgatgac g

## (2) INFORMATION ON SEQ ID NO. 13:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 401 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

ataaactacag cttcagcaga caactaaaga gactgcatta aggtgatttc tctggctata 60  
 aagagagccc ggccgcagag catgtgactg ctgggacctc tgggataggc aacactgccc 120  
 tctctccccc agagcgaccc cccgggcagg tcggggccca aggaatgacc cagcaactgc 180  
 tccctaccca gcacactctc tttactgcca cctgcaatta tgctgtgaag atgactgggt 240  
 gtggtcatca cgattcagag aaatcaagat ctatgaccat tttaggcaaa gagagaaact 300  
 tggagaattt ctgaggacta ctgaacctt ttttgcttt taaaaaaaata ctaaatcctc 360  
 acttcagcat atttagttgt cattaaaatt aagctgatat t

## (2) INFORMATION ON SEQ ID NO. 14:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1002 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

gacaatataa aaagtggaaa caagcataaa ttgcagacat aaaataatct tctggtagaa 60  
 acagttgtgg agaacaggtt gagtagagca acaacaacaa aagcttatgc agtcaccc 120  
 tttgaaaatg ttaaataacaa gtcctattct ctttgcacag ctggggttag ctagaggtag 180  
 ccaattactt ctcttaaggt ccatggcatt cgccaggatt ctataaaagc caagttaact 240  
 gaagtaaataa tctggggccc atcgcacccc cactaagtag tttgtcacca tgggttatct 300  
 taaaagtcat ttttcaactgt ttgactcaga atttgggact tcagagtcaa acttcattgc 360  
 ttactccaaa cccagttaa ttcccactt ttttaagtag gcttagctt gagtgatttt 420  
 tggctataac cgaaatgtaa atccaccc 120 aaacaacaaa gttgacaag actgaaatgt 480  
 tactgaaaac aatggtgcca tatgtccaa agacattcc ccaagataac tgccaaagag 540  
 tttttgagga ggacaatgt catttattat gtaggagcct tgatatctct gcaaaataga 600  
 attaatacag ctcaaatgga gtatcatacc agctttctg cccaggaagt aacaacatc 660  
 actacgaaca ttagatgtaca agaggaaact ttcataatgc attttttcat tcatacattc 720  
 attcaataaa cattagccaa gctaattgtcc caagccactg tgccaggat taacaatata 780  
 acaacaataa aagacacagt ccttcctctc aagggttca gtctagtagg gaagatgatt 840  
 attcattaaa atttttgggt catcagaatc atgaggagct tgtcaaaaat gtaaattcc 900  
 gcctatgttc tcagatattc tggtaggtc aggagtggga accccaaaatc aattctttta 960  
 acaaaacacta aagggtatcc taacacaggc ggtgtgagga cc

## (2) INFORMATION ON SEQ ID NO. 15:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 280 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

cgaggtgggc caccgtgtc tggctgaga ttttaaatg aggattacat ttcctattt 60  
ataatattcc tattctaattc tattgtattc ttacaattaa atgtatcaaa taattctaa 120  
aacattatt agaaacaaac tgcctaatac cttataagac taaaaaaatc accaagatga 180  
aactgtatta tgactctcaa tatttaaaca tttaaaaaaaaa tgtagtgtt tgttaagcac 240  
caatcttaac tatttcaccc gcccggcg 290  
ccgctcgagg

## (2) INFORMATION ON SEQ ID NO. 16:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 2041 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

## (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

ccccccgcag aactcccccc tggaaatagga tttttaaaac ccttgacaat tagaaatcct 60  
atagaggta gcattttta ggtaaaaata tggttgcccc tacagggatc atgcaacttc 120  
cttaaaacca attcagcaca tatgtataaa gaacccttt taaaaacatt tgtacttgaa 180  
atacagacac agtgatgctg aagacactaa acaaaaactg aaaaagtacta taccttgata 240  
aattttgtta ttgccttctt tagagacttt ataatctctt gttgattttc aaggacttga 300  
atttataat gggtaatta cacaagacgt aaaggatttt taaaaacaaa gtattttttt 360  
ttacctctag catcaattct tttataaaaga atgctaaata aattacattt tttgttcagt 420  
aaaactgaag atagaccatt taaatgctt caccatattt aacgcagctt aatttagggac 480  
caggtacata ttttcttctt aacatttttg gtcaagcatg tctaaccata aaagcaaatg 540  
gaattttaag aggtagattt ttttccatg atgcattttt ttaataaaatg tgtcaagaaa 600  
ataaaaacaaa gcactgagtg tggctcttgg aagtataagg gctaatgaa aaataaaaga 660  
tagatatttgc ttagatgtcg acattttaac agtcatgta ttagacgtt cgtgaccagt 720  
gcattttggaa ctctctcagg atcaaaaatac gaggctgcctt actgtattaa atcctccctcc 780  
acccccctcca ccagttggtc cacagcttcc tgggtggctcg ttgtcatcaa atccattggg 840  
ccgaaatgaa catgaagcag atgcagcttgg gaggggccgg gctcgagcat tcaactctt 900  
ttcctgtaaa tatagtttat tggcttttgc tatacatcc ataagttctt tctgttagagg 960  
tgggtctcca ttatccaga gtcactgggt tgggttattt ccacttaaac cattagact 1020  
atgctgtttt ttataaaaaa gcacataaagc tggctccctt gaaaacctgc tcgttaatttt 1080  
ctggactgac taaaatgaaatgaaatgtcacttactgtca taaaataaaa acccattctt 1140  
ttgacatttc ctatatttcc aaatcctgtt caaaaactgc actggggacta tctctcccta 1200  
gtaaaatgact ctgggaggat gctaatgcca gagcctcaga ctgggtggatc atctgatatg 1260  
aagagtctgt acttgtgata ttctggcat aagaatagta atgcccactt tcagaggata 1320  
taccagagtg aaccacaacg gaacttaata gatagggcac caattttg caggaagctt 1380  
catcagtccc tgaaggctt aattttttag caaggcttc actaagatca gtgaagtcaa 1440  
catctacaga ccaactttct gacaatgaaag agaaagaagt aattcttcta actggcaact 1500  
ccaaaaccag tggccagtgatcattgtct aaaaattttcc ttctcacatg atacttctga 1560  
tcataatgaaa atctcagggat agttaagaata aggtattcag gtcctccgt gatttgatcata 1620  
gttttctcag cattttgcag agaggcacag ttttcacaaat aatattgggt atcaccagta 1680  
agaatctctg gagccaaaaa aataatttag taagtcaatcactgaaggctt tggtttcacc 1740  
  
tccccggtttc tgaggtacat ctttattaaac aagaatcttg ttagattcgt tagggacaga 1800  
agtgtttca gaacagtaaa actcatttgg aggactgcct atggttttt cattcacaag 1860  
tgagtccacag atgaaggcag ctgttggattataactt actggctctt ctgaaggacc 1920  
gggtacagac gcttgcatttta gaccaccatc ttgtataactg ggtgatgatg ctggatctt 1980  
gacagacatg ttttccaaag aagaggaagc acaaaaacgc agcgaaagat ctgtaaaggc 2040  
t

## (2) INFORMATION ON SEQ ID NO. 17:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 235 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

```
cgccccgggc aggtgtcagg ggttccaaac cagcctgggg aaacacagcg tagaccctc 60
acctctacaa ataaaaaaatt aaaaaattag ccaggtgtgg cagcgaacaa ctgtagtc 120
agataactcg gagactgagc tggaaaggat cacttgagcc caagaagtcc aaggttacag 180
tgggccacga tcatgtcatt acactccagc ttgggtgaca aaatgagact gtcta
```

## (2) INFORMATION ON SEQ ID NO. 18:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 2732 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

gtgtggagtt tcagctgcta ttgactataa gagctatgga acagaaaaag cttgcggct 60  
 tcatgttgc aactactta tattggagctt cattggaccc ttatctgc 120  
 aaatattatc ttcttggta tcacattgtg caaaatggg aagcattcaa acactttgaa 180  
 accagattct agcagggtgg aaaaacattaa gtcttgggtg ctggcgctt tcgctttct 240  
 gtgtcttcctt ggccctcacctt ggtcctttgg gttgctttt attaatgagg agactattgt 300  
 gatggcatat ctcttcacta tatttaatgc tttccaggga gtgttcattt tcatcttca 360  
  
 ctgtgctctc caaaaagaaag tacgaaaaga atatggcaag tgcttcagac actcatactg 420  
 ctgtggaggc ctccccactg agagtccccca cagttcagtg aaggcatcaa ccaccagaac 480  
 cagtgcctgc tattccctcg gcacacagag tcgtataaga agaatgtgga atgatactgt 540  
 gaaaaacaa tcagaatctt cttttatctc aggtgacatc aatagcactt caacacttaa 600  
 tcaagggtggc ataaatctt atatattttt acaggactga catcacatgg tctgagagcc 660  
 catcttcaag atttatatca tttagaggac attcaactgaa caatgccagg gatacaagtg 720  
 ccatggatac tctaccgcta aatggtaattt ttaacaacag ctactcgctg cacaagggtg 780  
 actataatga cagcgtgcaa gttgtggact gtggactaag tctgaatgat actgctttt 840  
 agaaaatgtat catttcagaa ttgtgcaca acaacttacg gggcagcagc aagactcaca 900  
 acctcgagct cacgctacca gtcacaaacctg tgattggagg tagcagcagt gaagatgatg 960  
 ctattgtggc agatgttca tctttatgc acagcgacaa cccaggcgtg gagctccatc 1020  
 acaaagaact cgaggccacca ctattccctc agcggactca ctcccttctg taccacccccc 1080  
 agaagaaagt gaagtccgag ggaactgaca gctatgtctc ccaactgaca gcagaggctg 1140  
 aagatcacct acagtccccca aacagagact ctcttatac aagcatgccc aatcttagag 1200  
 actctcccta tccggagagc agccctgaca tggagaaga cctctctccc tccaggagga 1260  
 gtgagaatga ggacatttac tataaaagca tgccaaatct tggagctggc catcagcttc 1320  
 agatgtgcta ccagatcagc agggcataa gtgatgttataaataatcccc attaacaacaa 1380  
 aagggtgtat tccagaagga gtgttagag aaggacaat gtagctggg acaagtcttt 1440  
 aatcatacag ctaaggaattt ccaaggccca catcgagta ttaataaataa aagacaccat 1500  
 tggctgacg cagctccctc aaactctgct tgaagagatg actcttgacc tgggttctc 1560  
 tgggtaaaaa aagatgtacg aaccttgcag ttctgtgaat ttttataaaaa catacaaaaa 1620  
 ctttgtat acacagagta tactaaagt aattattgt tacaagaaaa agagatgcca 1680  
 gcaaggattt ttaagattct gctgctgttt agagaaattt tggaaaacaagc aaaacaaaaac 1740  
 tttccagcca ttttactgca gcagtctgtt aactaaattt gtaaatatgg ctgcaccatt 1800  
 tttttaggccc tgcattgtat tatatacaag acgtaggctt taaaatccctg tgggacaaat 1860  
 ttactgtacc ttactattcc tgcataagact tggaaaagca ggagagat tctgcattcag 1920  
 tttcagttc actgcataatc ttttacatta aggcaagat tggaaaacatg cttaaccact 1980  
 agcaatcaag ccacaggcct tatttcatat gtttcctcaa ctgtacaatg aactattctc 2040  
 ataaaaaatg gctaaagaaa ttatattttt ttctattgtt agggtaaaat aaatacattt 2100  
 gtgtccaaact gaaatataat tgcatttttataattttaa agagtgaaga aaatattgtg 2160  
 aaaagctctt gtttgcacat gtatgaaat gtttttctt acactttgtc atggtaagtt 2220  
 ctactcattt tcacttctt tccactgtat acagtgttct gctttgacaa agtttgtctt 2280  
 tattacttac atttaaattt ttttgcataa aaaaacgtg ttttattggg agaaacaaaac 2340  
 tctttgaagc cagttatgtc atgccttgc caaaagtgtt gaaatctaga aaagattgtg 2400  
 tgcacccctt gtttattctt gaaacagaggg caaagaggc actggcact tctcacaac 2460  
 tttcttagtga acaaaagggtg cctattctt tttttttttt taaaataaaa cataaatatt 2520  
 actcttccat attccttctg ccttatatttta gtaattaattt tattttatga taaagttcta 2580  
 ataaaaatgtat aattgttca gcaaaaattctt gctttttt catcccttgc tggtaacccctg 2640  
 ttaataatga gcccatcact aatatccagt gtaaaatgta acacgggttg acagtaaata 2700  
 aatgtgaattt ttttcaagtt aaaaaaaaaaa aa

## (2) INFORMATION ON SEQ ID NO. 19:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 276 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

ctccctaaat gatttaaaaa taaattggat aaacatatga tataaagtgg gtactttaga 60  
aaccgccttt gcatattttt tatgtacaaa tctttgtata caattccgat gttccttata 120  
tattccctat atagcaaacc aaaaccagga cctcccaact gcatgcctca agtccctgtg 180  
gagcactctg gcaactggat ggcctactt gcttctgac aaaatagctg gaaaggagga 240  
gggaccaatt aaatacctcg gccgcgacca cgctgg

(2) INFORMATION ON SEQ ID NO. 20:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 2361 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

## (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

attgtaccag ccttcatgaa cgtggccct gcttcgttt tgagggccat aagtcattg 60  
 cccactggtt tagaggctac cttatcattt tcgtccgtga ccggaaagggt tctccaaat 120  
 cagagttac cagcaggat tcacagaccc ccgacaagca gattctaaac atctatgacc 180  
 tggcaacaa gtcatagcc tatagcaccg tctttgagga tggatggat gtgcttgctg 240  
 agtggggctc cctgtacgtg ctgacgcggg atgggcgggt ccacgcactg caggagaagg 300  
 acacacagac caaactggag atgctgttta agaagaacct atttgagatg gcgatiaacc 360  
 ttgccaagag ccagcatctg gacagtgtatg ggctggccca gattttcatg cagatggag 420  
 accatctcta cagcaagggc aaccacgtg gggctgtcca gcaatatac cgaaccattt 480  
 gaaagtggta gcacatctac gtgatccgca agtttcttggta tgcccagcgc attcacaacc 540  
 tgactgccta cctgcagacc ctgcaccggc aatccctggc caatgccgac cataccaccc 600  
 tgctcccaa ctgctataacc aagctcaagg acagctcgaa gctggaggag ttcatcaaga 660  
 aaaagagtga gagtgaagtc cactttgtatg tggagacagc catcaagggtc ctccggcagg 720  
 ctggctacta cttccatgcc ctgtatctgg cggagaacca tgcacatcat gagttggacc 780  
 tgaagatcca gctagaagac attaagaatt atcaggaagc ccttcgatac atcggcaagc 840  
 tgcctttga gcaggcagag agcaacatga agcgctacgg caagatccctc atgcaccaca 900  
 taccagagca gacaactcgtt ttgctgaagg gactttgtac tgattatcg cccagctcg 960  
 aaggccgcag cgatagggag gccccaggct gcagggccaa ctctgaggag ttcatcccc 1020  
 tctttggccaa taacccgcgca gagctgaaag ctttcttgcgca gacatgagt gaagtgcagc 1080  
 cagactcacc ccaggggatc tacgacacac tccctgatc ggcactgcag aactggccc 1140  
 acgagaagga tccacaggctc aaagagaagc ttcacgcaga ggcattttcc ctgctgaaga 1200  
 gtggtcgtt ctgcgacgtc tttgacaagg ccctggctt gtggccagatg caccacttcc 1260  
 agatgtgtt ctttacctt tatgacggcagg ggaagctgtt ccacgcagatc atgcactacc 1320  
 acatgcacca cgacgcgtac cggcagggtca tcagctgtt tgagcgcatt ggggaggcagg 1380  
 accccctctt gtgggagcag gcccctcagct acttcgctcg caaggaggag gactgcagg 1440  
 agtatgtggc agtgcgttcc aagcatatcg agaacaagaa ccttcatgcgc cctctttag 1500  
 tggtgccagac cttggcccac aactccacag ccacacttc cgtcatcagg gactacccgg 1560  
 tccaaaaact acagaaacag agccagcaga ttgcacagga tgagctgcgg gtgcggcggt 1620  
 accgagagga gaccacccgt atccgcagg agatccaaga gctcaaggcc agtcctaaga 1680  
 ttttccaaaa gaccaagtgc agcatctgtt acagtcctt ggagttgcgg tcagtcact 1740

tcctgtgtgg ccactccttc caccaacact gctttgagag ttactcgaa agtgcgtt 1800  
 actgccccac ctgcctccct gaaacccggaa aggtcatgaa tatgatccgg gcccaggaaac 1860  
 agaaacgaga tctccatgat caattccagc atcagctcaa gtgccttcaat gacagctttt 1920  
 ctgtgattgc tgactacttt ggcagagggtt ttttcaacaa attgactctg ctgaccgacc 1980  
 ctccccacagc cagactgacc tccagctgg aggctggct gcaacgcgc ctactcatgc 2040  
 actccaggag gggcacttaa gcagcctgga ggaagatgtg ggcaacagtg gaggaccaag 2100  
 agaacagaca caatgggacc tggggggcg ttacacagaa ggctggctga catgcccagg 2160  
 gctccactct catctaattgt cacaggccctc acaagactaa agcggaaacctt tttctttcc 2220  
 ctggccttcc ttaattttaa gtcaagcttgc gcaatccctt cctctttaac taggcagggtg 2280  
 tttagaatcat ttccagatata atggggggga aggggaacctt caggcaaacc tcctgaagtt 2340  
 ttggaaaaaa aagctggttt c

## (2) INFORMATION ON SEQ ID NO. 21:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 179 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

aggtgttaga tgctctttagaa aaagaaaactg catctaagct gtcagaaaatg gattctttta 60  
acaatcaact aaaggaactg agagaaaacct acaacacacaca gcagtttagcc cttgaacacgc 120  
tttataagat caacgtgaca agttgaagga aattgaaaagg aaaaaatttag aactaatgc

## (2) INFORMATION ON SEQ ID NO. 22:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 905 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

ttttttttttt ttctttaacc gtgtggtctt tatttcagtg ccagtgttac agatacaaca 60  
caaatgttcc agttagaaagg aattcaaacg gaatgccaag gtccaagcca ggctcaagaa 120  
ataaaaaggg aggtttggag taatagataa gatgactcca atactcactc ttccctaaagg 180  
caaaggtaact tttgatacag agtctgatct ttgaaaactgg tgaactcctc ttccacccat 240  
taccatagtt caaacaggca agttatgggc tttaggacac tttaaaaattt gtggtggaa 300  
tagggtcatt aataactatg aatataatctt tttagaaggtg accattttgc actttaaagg 360  
gaatcaattt tgaaaatcat ggagactatt catgactaca gctaaagaat ggcgagaaag 420  
gggagctgga agagccttgg aagtttctat tacaataga gcaccatatac cttcatgcc 480  
aatctcaaca aaagctctt ttaactccat ctgtccagtg ttacaaaata aactcgcaag 540  
gtctgaccag ttcttggtaa caaacataca tgggtgttc tgggtgtata cagcaatgca 600  
cagaaaaggc taccaggagc ctaatgcctc ttcaaacat tgggggaacc agtagaaaaa 660  
ggcaggggctc cctaatgtcc attattacat ttccatccg aatgcccagat gttaaaagt 720  
cctgaagatg gtaaccccagc tagtgaggaa taaatacccc accttgcaca gtccacagag 780  
aaacaacagt agaaaagaagg ggcaactctt tgctgcagag acaaagtgaag tgtttttcg 840  
ccatggattg cagtcctctc ctccagacca gctgcttatt tcctcagggg cccaggaaat 900  
gttga

## (2) INFORMATION ON SEQ ID NO. 23:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 213 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

ggtctttct ttcctttttt tttttccaaa agtgttcttt tatttttagt aacatatatt 60  
 gtataaatac tctattttat atgcacttcc acaaaagcga tataatttaa aagttttttt 120  
 cattagaaat aaatgtataa aaataaaatat gttatttagt gcatttatta ctaactataag 180  
 tccttcttgg aaggaacacc caaaccaata cttataaaagt acatgttaatt tatagttaaca 240  
 tattttacta tatacatatg gaaaaaatca tattctcaca gaagagctga acagacattc 300  
 accaggatac gactgttggc ccagctgtg gagatggacc tgctaccctt cagcagcctc 360  
 cccaccacaa gacaagtgt ctcaatgtcc ccaaaacctgt gggaccctgt tctacacacc 420  
 tcattttgt tccggcggtt catcctcctt gtgtgatgtt actgattttc atgagacaca 480  
 agttacttct ttacatccat attcccaaag cagggttaca tggtaggaaa gaaaggaagt 540  
 tggaggtact aagcttattt tgccttctt agcttttacc agcatctaat gcttcactgc 600  
 tttttttcca ttgttagactt taatgcattt gaataaaatac atggagttgt tttttccctca 660  
 aaatgaatta cacaataaa gactgagatg gtccaaaaaaa ggaaagagga agccatttgc 720  
 gttatttca ctttgcgttccat tctcttccat tggtaacaa tctgaagttt taattctcgg 780  
 tagaaataat gtataaatac tctctgaaac catagcagcc ataaacagtg ctggcataaag 840  
 atccttattt tactcccttc tccccccatt tttagtgagg taaagtaaaa caggtcttag 900  
 taaaatctca cttttctcctt acttttcatt tcccaacccc catgataacta agtatttgat 960  
 aagtaccagg aaacagggtt tgtaatagtt ctaactttt ttgacaattt ctttgggg 1020  
 tctaaacttgc taatagatgt aacaaaagaa ataataataa taatgcccgg ggcttttatta 1080  
 tgctatatca ctgctcagag gttataataatc ctcactaact atcctatcaa atttgcaact 1140  
 ggcagtttac tctgtatgatt caactccctt tctatctacc cccataatcc caccttactg 1200  
 atacacctca ctgggttactg gcaagatacg ctggatccctt ccagccttct tgcttccct 1260  
 gcaccagccc ttccttccat tgccttgcggc tcaaagctaa caccacttac accacttaac 1320  
 tgcattctgc cattgtgcaaa aagtctatga aatgttttagg tttttttaaa ggatcacagc 1380  
 tctcatgaga taacaccctt ccacatggg acagacactt caagcttctt tttttgttaac 1440  
 ctttcccaca ggttttagaa catgtatgacc actccccag ctgccactgg gggcagggat 1500  
 ggtctgcaca aggtctgggt ctggctggct tcacttccctt tgacactctg gaagcaggct 1560  
 gtccattaaat gtctcggtat tctaccatgc ttctctgcca acccaattca catgacttag 1620  
 aacattcgcc ccacttccat atgacccatg ctgaaaaagt ggggatagca ttgaaagatt 1680  
 ctttccctt ctttacgaag taggtgtatt taatttttagg tcgaagggca ttgcccacag 1740  
 taagaacctg gatggtcaag ggcttttga gagggctaaa gctgcgaatt ctttccaatg 1800  
 ccgcagagga gccgctgtac ctcaagacaa caccttgcataatgtct tgctctaagg 1860  
 tggacaaaatgtatgtatca ttaagaatat atgtgcacatc agcagcttgc atggcaagaa 1920  
 agctgccatt gttcctggat cccctctggt tccgctgttt cacttcgatg ttggggctc 1980  
 cagtttggaaat ttttttttttgcata tcatgatatc caggtttgc actagtaact gatcctgata 2040  
 ttttttttaca agtagatcca tttccccccgc aaacaccaca ttatcaaac ttcttttgg 2100  
 agtctatgtatgcgatcaca ccagcttttca caca

## (2) INFORMATION ON SEQ ID NO. 24:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1626 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:

ggacaatttc tagaatctat agtagtatca ggatatattt tgctttaaaa tatattttgg 60  
 ttattttgaa tacagacatt ggctccaaat tttcatcttt gcacaatagt atgactttc 120  
 actagaacct ctcaacattt gggactttg caaatatgag catcatatgt gttaaaggctg 180  
 tattcatttaa tgctatgaga tacattgttt tctccctatg ccaaacaggt gaacaaacgt 240  
 agttgtttt tactgatact aaatgttgc tacctgtgat ttatagtagat gcacatgtca 300  
 gaaaaaggca agacaaaatgg cctcttgtac tgaatacttc ggc当地actta ttgggtcttc 360  
 attttctgac agacaggatt tgactcaata tttgttagagc ttgc当地tagaa tggattacat 420  
 ggtatgtatg cactggtaga aatggttttt agttatgtac tca当地attca tctc当地ggatg 480  
 aatctttat gtctttttat tgtaaggata tctgaattta ctttataaaag atgggttttag 540  
 aaagctttgt ctaaaaatgg ggc当地tagaa tggtaacttc atttcaggt gccaagggggt 600  
 agaaaaataa tatgtgtgtt gttatgttta tggtaacata ttatttaggtt ctagtcatga 660  
 atgtatttaa atattttca tattctgtga caagcattta taatttgcaa caatggggatg 720  
 ccatttagcc cagggggaaa gtcttggaaac tc当地ggatcc cttgaaggat atgctggcag 780  
 ccatctttt gatctgtgt taaactgtaa ttatagacc agactaaatcc ctaacttgg 840  
 tctggatgc attagtttgc ccttgc当地ca ttcccaat ttccaggaaat ttccaggaaat tc当地ggggca tc当地gggttt 900  
 ggtctatgtt gttaaaacac aagaacagag agatccagct gaaaaaggatg gatccctcaat 960  
 atccctaacta actggccctc aactcaagca gagtttcttc actctggcac tggatcatg 1020  
 aaacttagat gaggggatgt tggatattttt atacaatttt aatacaatgt cttacattga 1080  
 taaaattttt aaagagccaa actgcattttt atttctgtcat ccacattcca atcatattag 1140  
 aactaaagata ttatctatg aagatataaa tggatgc当地agag agactttcat ctgtggattg 1200  
 cgttggatct tagggtttctt agcactgtatg cctgc当地caag catgtgatat gt当地aaataaa 1260  
 atggattctt ctatagctaa atgagttccc tctgggaga gttctggatc tgcaatcaca 1320

atgccagatg gtgtttatgg gctatgttgc taagtaagt gtaagatgtc atgaagtaag 1380  
 tggatgttgc ttcatcttgc gaaactctt gatgc当地gtg ct当地gtatg gaataaaat 1440  
 tggatgtcaata tgatgtcatt caactttgc当地 ttgaattgaa ttttggatgtt atttatgt 1500  
 attatcacgt tcacgcttct agtgcttca accattttat aaccattttt gtacatattt 1560  
 tacttggaaaa tattttaaat gaaatttaa ataaacattt gatgtgatat gt当地aaataaa 1620  
 aaaaaaa

(2) INFORMATION ON SEQ ID NO. 25:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1420 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vi) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:

gttcagcatt gtttctgctt ctgaaatctg tatagtacac tgggttgtaa tcattatgtc 60  
ttcattgaaa tccttgcata ttctcttcct cctcaatgaa agacacgaga gacaagagcg 120

acacaagctt	aagaaaaaacg	agcaaggaag	agtatcttca	ttattctcat	tttctcttag	180
ttggaaacaa	aaacatgaag	gactccaact	agaagacaga	tatttacatt	taaatagatt	240
agtggggaaa	cttaagagt	ttccacatata	tagtttcat	tttttgagtc	aagagactgc	300
tccttgtact	gggagacact	agtagtata	gttggtaatg	ttactttaaa	attatcttt	360
tatTTtataa	ggcccataaa	tactggttaa	actctgttaa	aagtgggcct	tctatcttgg	420
atggttcac	tgccatcagc	catgctgata	tattagaaaat	ggcatcccta	tctacttact	480
ttaatgctt	aaattataca	taaaatgctt	tatTTtagaaa	acctacatga	tacagtggtg	540
tcagccttgc	catgtatca	tttca	tttgc	caattaaatt	tcaactgttt	600
agggtggaga	aagaggtact	ggaaaacatg	cagatgagga	tatTTttat	gtgcaacagt	660
atccttgca	tgggaggaga	gttactctt	aaaggcaggc	agctaagtg	gacaatgttt	720
tgtatatagt	tgagaatttt	acgacacttt	taaaaattgt	gtattgtta	aatgtccagt	780
tttgctctgt	tttgctgaa	gttttagtat	ttgtttctt	ggtgacac	tgaaaaccaa	840
accagtacct	ggggaggtt	gatgtgtgtt	tcaggcttgg	agtgtatgag	ttgttttgct	900
tgtatTTcc	tccagagatt	ttgaacttta	ataattgcgt	gtgtgtttt	ttttttttaa	960
gtggcttgt	tttttttct	caagtaaaat	tgtgaacata	tttctttat	aggggcaggg	1020
catgagttag	ggagactgaa	gagtattgt	gactgtacat	gtgccttctt	aatgtgtttc	1080
tcgacacatt	tttttcagt	aacttggaaa	ttcaaaagg	acatttggtt	aggttactgt	1140
acatcaatct	atgcataaaat	ggcagctt	tttcttgagc	cactgtctaa	attttggttt	1200
tatagaaatt	tttatactg	attgggtcat	agatggtcag	ttttgtacac	agactgaaca	1260
atacagcact	ttgccccaaa	tgagtgttagc	attgtttaaa	cattgtgtgt	taacacctgt	1320
tctttgtaat	tgggttgtgg	tgcatttgc	actacctgga	gttacagttt	tcaatctgtc	1380
agtaaataaa	gtgtcccttta	acttcaaaaaa	aaaaaaaaaa			

## (2) INFORMATION ON SEQ ID NO. 26:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 689 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:

aaacaaacaa aaaaaaaagt agtactgtat atgtaaatac tagctttca atgtgctata 60  
caaacaatta tagcacatcc ttccctttac tctgtctcac ctccctttagg tgagtacttc 120  
ctttaataag tgctaaacat acatatacgg aacttggaaag ctttgggttag ctttgcctta 180  
ggtaatcagc ctatgttaca ctgttccag ggagtagttg aattactata aaccattagc 240  
cacttgttctc tgcaccatt atcacaccag gacagggtct ctcaacctgg gcgctactgt 300  
catttggggc caggtgattc ttccctgcaa gggctgtctt gtacctgccc gggcggccgc 360  
tcgaagcgtg gtcgcggccg aggtactgaa aggaccaagg agctctggct gcccctcagga 420  
attccaaatg accgaaggaa caaagcttca gggctctggg tggtgtctcc cactattcag 480  
gaggtggtcg gaggttaacgc agcttcattt cgtccagttc tttccagttt taaaagttgt 540  
tgtcaagatg ctgcattaaa tcagggcaggt ctacaaaggc atcccaagca tcaaacatgt 600  
ctgtgatgaa gtaatcaatg aaacaccgga acctccgacc acctccctgaa tagtgggaga 660  
cacaccaga gcctgaagtt tgccttcg

## (2) INFORMATION ON SEQ ID NO. 27:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 471 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:

```

tccccagcggc atgaagtttgc agattggcca ggccctgtac ctgggcttca tctccttcgt 60
ccctctcgct cattgggtggc accctgtttt gcctgtcctg ccaggacgag gcaccctaca 120
agccctaacc cagggcccgcc acggacccac caccggact gcaaacaccg cacctgccta 180
ccagccacca gctgcctaca aagacaatcg ggccccctca gtgacctcgg ccaccacagc 240
gggtacagggc tgaacgacta cgtgtgagtc cccacagccct gcttctccccc tgggctgctg 300
tgggctggtt cccggcggga ctgtcaatgg aggccagggtt tccagcacaa agtttaccc 360
tgggcaattt ttgtatccaa gaaataatg tgaatgcgag gaaatgtctt tagagcacag 420
ggacagaggg gaaataaga ggaggagaaa gctctctata ccaaagactg a

```

## (2) INFORMATION ON SEQ ID NO. 28:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 929 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:

```

ggtaactca gtgcattggg ccaatggttc gacacaggct ctgccagcca caaccatcct 60
gtcgcttcgt acgggtttggc tgctgggtggg ctttccctc actgtcattt gaggcatctt 120
tggaaagaac aacggccagcc cctttgtatgc accctgtcgc accaagaaca tcgccccggga 180
gattccaccc cagccctgggt acaagtctac tgcacatccac atgactgttgc gaggcttcct 240
gccttcagt gccatctctg tggagctgtt aatccatctt gccacagttt ggggtcggga 300
gcagttacact ttgtacggca tcctcttctt tgccttcgttcc atccgttgc gttgtggggc 360
ttgcacatctcc attgcactca cctacttcca gttgtctggg gaggttacc gctgggtgggt 420
gcatctgtt ctgagtgttgc gctccaccgg cctcttcattt ttcccttactt cagttttctt 480
ttatgcccgg cgctccaaca tgcgtggggc agtacagaca gtagagtttct tcggctactc 540
cttacttactt gtttatgttct tcttcctcat gctggggcacc atccctttt tttcttcctt 600
aaagtttcatc cggatatactt atgttaaccc caagatggac tggatctgtt atggcagaac 660
tattgtgtt ctctccctttt cttcatgccc tggtaacttcccttccaccggc ttcttcttctt 720
attgactgaa ttgtgtgttgc gcatgttgc ctccctttt tcccttggg cattcccttcc 780
ccagagaggg cctggaaatt ataaatctt atcacataag gattatataat ttgaactttt 840
taagttgcct ttagtttgg tcctgttacat tcttttacat attaccaaaa taaaatttt 900
taagaaaaag aaaaaaaaaaaa aaaaaaaaaa

```

## (2) INFORMATION ON SEQ ID NO. 29:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1775 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

```

gaacgtgatg ggaactttgg gaggatgtct gagaaaatgt ccgaagggat tttggccaac 60
accagaaaac gccaatgtcc taggaattcc ctccccaaaat gcttcccaaa aaattactca 120
ttgacaattc aaattgcact tggctggcgg cagccccggc ggccttcagt ccgtgtgggg 180
cgccccgctg gccttctctt cgttaggactc cccaaactcg ttcaactctgc gtttatccac 240
aggataaaagc caccgcttgtt acaggttagac cagaaacacc acgtcgccccc ggaagcagggc 300
cagccggta gacgtggca tggtgatgat gaaggccaaag acgtcatcaa tgaaggtgtt 360
gaaagccttgc taggtgaagg ccttccaggg cagatgtgcc actgacttca acttttagtt 420
cacaagagc tggggcagca tgaagagggaa accaaaggca tagaccccggt tgacgaagct 480
gttgattaac caggagtacc agcttcttca tttgatattc aggagttaat agacagcacc 540
cccgacacag agagggtaca gcaggatata caagtacttc atggcccttag tatcgtactc 600
ctcggttttc ctctcagatt cgctgttaatg gccaaactga aattcgggca tcagccctct 660
ccaaaaaaata gtcatcttca atgccttctt cactttccac agctcaatgg cggctccaaac 720
acccggccggg accagcacca gcaggctcg tctgctcgcc agcaggaaaca gaaagatgac 780
cacgtgtcg aaggcagcgcc agagcactgc cttgggtggac atgcccata tgctttctt 840
cttcttccag aaactgtatgtt catttttaaa ggccaggaaa tcaaaagagaa gatgaaacgc 900
tgcgacaaag aaggtcagcg ccaggaagta taagttggta tctacaaaaaa ttcccttcac 960
ctcatcaga tctttctctg aaaacccgaa ctgctgcagg gtagtacacgg cgtctgcac 1020
gtggatccag aagcgcagcc gccccagtga gaccttgcg taggacacgg tgaggggcag 1080
ctcggtgttgc gagcgggtta tgaccatcag gtccttcacg cgggtgtcga gctgtcgt 1140
gaacaggatg ggcaggtaat gcacgggttt ccccagctgg atcatcttca tgtaccgatg 1200
cacatcgccca ggcaggggagg acccgtaaa gacaaagttg tccgcccata cggtcagcgc 1260
cagccgcggc cgcccaatggg acactggctc atccaggca ctcgtcggt tctttccgc 1320
ctcgatctgc tggatgtatcag actccccggt gagcaggatgg atttcttctg gcttggggac 1380
catgttaggtg gtcagaggac tgaccaggatg cacctgcctt ccgtcggtgcc acggcaggac 1440
cccacgtga tggaggaaata tggatggcata cagcgtccca tggatgtcgttgg ttttttttgg 1500
tacagaaaaca ttaactgtcc tttcaaaatgtt ggactccaca tcaaaatgtt ccacattcaa 1560
gaccaggatcg atgttgcgttcc cagcaccaggatgg gtcgtgggtt acacgctcgt 1620
ctgcagcttgc ggccgcggcggc ccaggttaggg ctggatgcgtt tggatgtccgc cggagcaccgg 1680
gcgggtgttag acgatgcgttcc acatgaccatc gcaggatgtgc accacgttgc ccacaaacac 1740
gccccaccacc aagctggtaaaggatgtcgcc gcccc

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## (2) INFORMATION ON SEQ ID NO. 30:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 4064 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

ATTTCTCCCC GTTCTTTATC AGAGCCCCCA AAATAAGTAG GAATGGGCAG TGGCTATTCA 60  
CATTCACTAC ACCTTTCCA TTTGCTAATA AGGCCCTGCC AGGCTGGGAG GGAATTGTCC 120  
CTGCCTGCTT CTGGAGAAAG AAGATATTGA CACCATCTAC GGGCACCATG GAACTGCTTC 180  
AAGTGACCAT TCTTTTCTT CTGCCAGTA TTTGCAGCAG TAACAGCACA GGTGTTTAG 240  
AGGCAGCTAA TAATTCACTT GTTGTACTA CAACAAAACC ATCTATAACA ACACCAAACA 300  
CAGAACATT ACAGAAAAAT GTTGTACAC CAACAACTGG AACAACTCCT AAAGGAACAA 360  
TCACCAATGA ATTACTTAAA ATGCTCTGA TGTCAACAGC TACTTTTTA ACAAGTAAAG 420  
ATGAAGGATT GAAAGCCACA ACCACTGATG TCAGGAAGAA TGACTCCATC ATTTCAAACG 480  
TAACAGTAAC AAGTGTACA CTTCCAAATG CTGTTCAAC ATTACAAAGT TCCAAACCCA 540  
AGACTGAAAC TCAGAGTTCA ATTAAAACAA CAGAAATACC AGGTAGTGTGTT CTACAAACAG 600

ATGCATCACC TTCTAAAAGT GGTACATTAA CCTCAATACC AGTTACAATT CCAGAAAACA 660  
 CCTCACAGTC TCAAGTAATA GGCACTGAGG GTGGAAAAAA TGCAAGCACT TCAGCAACCA 720  
 GCCGGTCTTA TTCCAGTATT ATTTGCCGG TGGTTATGTC TTGATTGTA ATAACACTT 780  
 CAGTATTGTC TCTGGTGGGT TTGTACCGAA TGTGCTGGAA GGCAGATCCG GGCACACCAG 840  
 AAAATGGAAA TGATCAACCT CAGTCTGATA AAGAGAGCGT GAAGCTTCTT ACCGTTAAGA 900  
 CAATTCTCA TGAGTCTGGT GAGCACTCTG CACAAGGAAA AACCAAGAAC TGACAGCTG 960  
 AGGAATTCTC TCCACACCTA GGCAATAATT ACGTTAATC TTCAGCTTCT ATGCACCAAG 1020  
 CGTGGAAAAG GAGAAAGTCC TGCAGAATCA ATCCCGACTT CCATACCTGC TGCTGGACTG 1080  
 TACCAAGACGT CTGTCCCAGT AAAGTGTGTT CCAGCTGACA TGCAATAATT TGATGGAATC 1140  
 AAAAAGAACCC CCGGGGCTCT CCTGTTCTCT CACATTTAAA AATTCATTA CTCCATTAC 1200  
 AGGAGCGTTC CTAGGAAAAG GAATTTAGG AGGAGAATT GTGAGCAGTG AATCTGACAG 1260  
 CCCAGGAGGT GGGCTCGCTG ATAGGCATGA CTTTCCTTAA TGTTTAAAGT TTTCCGGCC 1320  
 AAGAATTTCAT ATCCATGAAG ACTTCCTAC TTTTCTCGGT GTTCTTATAT TACCTACTGT 1380  
 TAGTATTATG TGTTTACAC TATGTTAATG CAGGGAAAAG TTGACAGTGT ATTATTAAT 1440  
 ATTAGGTAGA AATCATAACCA TGCTACTTTG TACATATAAG TATTTTATTC CTGCTTCGT 1500  
 GTTACTTTA ATAATAAACT ACTGTACTCA ATACTCTAA AATACTATAA CATGACTGTG 1560  
 AAAATGGCAA AAAAATTGTC TTCCTATAAT TATGAATATT TTTGGATGGA TTATTAGAAT 1620  
 ACATGAACTC ACTAATGAAA GGCAATTGTA ATAAGTCAGA AAGGGACATA GGATTACAT 1680  
 ATCAGACTGT TAGGGGGAGA GTAATTTATC AGTTCTTGG TCTTCTTATT TGTCAATTCA 1740  
 ACTATGTGAT GAAGATGTA GTGCAAGGGC ATTTATAACA CTATACTGCA TTCATTAAGA 1800  
 TAATAGGATC ATGATTTTC ATTAACTCAT TTGATTGATA TTATCTCCAT GCATTTTTA 1860  
 TTTCTTTAG AAATGTAATT ATTTGTTCTA GCAATCATG CTAACCTCTA GTTTGTAGAA 1920  
 AATCAACACT TTATAAATAC ATAATTATGA TATTATTTCATT CATTGTATCA CTGTTCTAA 1980  
 AATACCATAT GATTATAGCT GCCACTCCAT CAGGAGCAAA TTCTTCTGTT AAAAGCTAAC 2040  
 TGATCAACCT TGACCACTTT TTTGACATGT GAGATCAAAG TGTCAGTGTG GCTGAGGTTT 2100  
 TTTGGAAAGC TTTAGAACTA ATAAGCTGCT GGTGGCAGCT TTGTAACGTA TGATTATCTA 2160  
 AGCTGATTTT GATGCTAAAT TATCTTAGTG ATCTAAGGGG CAGTTAGTG AAGATGGAAT 2220  
 CTTGTATTTA AAATAGCCTT TTAAAATTG TTTTGTGGTG ATGTATTTG ACAACTTCCA 2280  
 TCTTCTAGGAG TTATATAATC ACCTGATTGTT TAGTTCTCTG ATGTTGGAC TATTTATAAT 2340  
 CAAGGACACC AAGCAAGCCT AAGCATATCT ATATTTCTGA CTGGTGTCTC TTTGAGAAGG 2400  
 ATGGGAAGTA GAAAAAAAAGAA AAAGAAAGAA AGGAAAGGAA GAGAGGAGAG AAGAAGGCAG 2460  
 GGATCTCCAC TATGTATGTT TTCACCTTGTG AACTGTTGAG CCCATGCTTA ATTTTAATCT 2520  
 AGAAGCTTTT AAATGGTGAG ACAGTGACTG GAGCATGCCA ATCAGAGAGC ATTTGCTTC 2580  
 AGAAAAAAA AAAATCTGAG TTTGAGACTA GCCTGGCCAA CATGTTGAAA CCCCATATCT 2640  
 ACTAAAAATA CAAAAATTAG CCTGGTGTGG TGGCGCACGC CTGAGTCTCC AGCTACTCTG 2700  
 GAGCCTGAGG AACGTGAATC GCTTGAACCC AGAAGACAGA GGTGCAGTG AGCTGAGATG 2760  
 GCACTATTGC ACTCCAGCCT GGGTGACACA GCAAGACTCT GTCTAAAAAA AAAAAAAA 2820  
 AAAAAAAGGAA AAAAAAGAAA GAAAGAAAAA AAAAGAGAG AGAGAGAGTC CCAGCACACC 2880  
 TAGATAATT ACCGAGCTCT TCAGCAAAAC CCATGTTACA TACAGCATAT TCCAAAGAAA 2940  
 TGAACCTTTC TGCAATTAA ATTATAAGT ATATGTTATT TTGAGCTTA GAGAAACCAT 3000  
 TTTCTCTACA TTTCATGAGC ATTGTTAGAA AAGAGTTAC AAGAATTAGG AAGAGGGAAC 3060  
 AATTTTAATG GTCAAGAAA AATAAAATT ATTCTAGTTC AAGAAGTGCA CACAAAGAAT 3120  
 ATGCATTAAT CTAACAACTA TGAGATTAA TCTTCTAAA AGGTCAAAGG AGGATTGAGA 3180  
 AGTTTACAGA GATGTCACAG GCATTTATA TCAATCTAA AGGTAAAGGTG TGCATTTTA 3240  
 TAAACCAACT TAAACCTCTG TTGAGATAGG ATATTTGTT TTCAAGCCAA AATTACCAT 3300  
 AATCAAATAT GTTTTAATTA TCTGATTAG ATGATCTACT TTTTATGCCT GGCTTACTGT 3360  
 AAGTTTTTA TTCTGATACA CAGTTCAAC ATCATTGCAA CAAAGAAGTG CCTGTATTTA 3420  
 GATCAAAGGC AAGACTTTCT ATGTGTTGT TTTGCATAAT AATATGAATA TAATTAAAGT 3480  
 CTATCAATAG TCAAAACATA AACAAAAGCT AATTAACCTGG CACTGTTGTC ACCTGAGACT 3540  
 AAGTGGATGT TGTGGCTGA CATAACAGGCT CAGCCAGCAG AGAAAAGAATT CTGAATTCCC 3600  
 CTTGCTGAAC TGAACATTTC TGTTACATAT GGTTGACAAA TCTGTGTGTT ATTTCTTTC 3660  
 TACCTACCAT ATTTAAATT ATGAGTATCA ACCGAGGACA TAGTCAAACCC TTCGATGATG 3720  
 AACATTCTG ATTTTTGCC TGATTAATCT CTGTTGAGCT CTACTGTTGG TCATTCAAGA 3780  
 TTTTATGATG TTGAAAGGAA AAGTGAATAT GACCTTAAA AATTGTATT TGGGTGATGA 3840  
 TAGTCTCACC ACTATAAAAC TGTCATTAT TGCCTAATGT TAAAGATATC CATCATTGTG 3900  
 ATTAATTAAA CCTATAATGA GTATTCTTAA TGGAGAATT TTAATGGATG GATTATCCCC 3960  
 TGATCTTTTC TTAAAATTCTCTGCACAC ACAGGACTTC TCATTTCCA ATAAATGGGT 4020  
 GTACTCTGCC CCAATTCTA GGGAAAAAAA AAAAAAAA AAAA

## (2) INFORMATION ON SEQ ID NO. 31:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 750 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

cacttggca ccccccatttt ctaaaaaaat ggaaatctgg agggcaaaaa aggtgtgctg 60  
aagggaaatg cctctgatgg cccaaaaacc ttcttccaaat ctagtgttagg aatggaatgg 120  
atagcaaatg gatcctttt ggccctccccc ggagcatgcc ttccctatct tatacttggc 180  
cccaactaaag cagaacgtta cggatatttc tgttttgcc attggatgcc tatctggcca 240  
aacagccccc ccctaattgg aaaatgcagt cctgtttaaa acctttgatt tacgactact 300  
tgtacatgct tgctcattac aattttgaca ttttttacat agtgaagacc ccaaacatat 360  
cagtgaaaca tgacaagatc ataaaagaaca gtatcatatt attattttatg cgcttttaca 420  
gtggcaagcc aattttgaaa tatctcattt aaaactcaga cccaaattcac tgagttatac 480  
ttttaatagc ttccctcagca cactatttcc catgcattaa atatgataaa ataatctatc 540  
actgcccattc ggtcttgtaa aaaggaagtc tgaatacaga gcccacaaca ctaaaattgt 600  
ttttctagct acaaagtata gcatcatcaa cacagacacg atttggactc cctgacaggt 660  
ggatttggaaa acgggtttt aagagaagag aacattttaa cataaatgtc attaagaatc 720  
ccaaaggcct tatttgcac caccgtcccg

## (2) INFORMATION ON SEQ ID NO. 32:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1620 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
 (A) ORGANISM: HUMAN  
 (C) ORGAN:

(vii) OTHER ORIGIN:  
 (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:

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gcaattcccc cctcccacta aacgactccc agtaattatg ttataacaaccc attggatgca 60
gtgcagccat tcataagaac cttggtgccc cagaaaaatc tgcctttttt ggtaccaaac 120
ctgaggtctt ttggaagata atgtagaaaa ccactaccta ttgaaggcct gtttggtca 180
atctgtcaa actctgtatga tacctgcctt atgtggattc tttccacac tgctttcatt 240
tttaagtata aagacttaga aaactagaat aatgctttt caaataatta aaagtatgtg 300

atgtttctggg tttttccctt ctttttagaa ccccgccctcc attaaaaaaaaa ttaaaaaaaaaa 360
aaaaaaaaact tttacatatt aaaaaataaa aattaacaaa atttcactta ttccaggaca 420
cgctggcatt tggactcaat gaaaagggca cctaaagaaa ataaggctga ctgaatgtt 480
tccataattt tcacacaata acagccccctt tctatccagc ttgccttcca tttatctcta 540
gggttagctt ttcaaggcaac atccccggtc attgccccaga aagtagtca gctatcagt 600
attggaatgg cacagggaaac cgaatcacat gggtgccctc cccttggttt tcaagtatct 660
tggagttgtg cacaaaaaattt aggtcatgcc ttcaagtgtt tggctttaa acctaccctt 720
tgacaatcag gtgctaatga ttgtatacta ttaaaaccag cacataagta ttgtaaatgt 780
gtgttccctcc taggttggaa gaaatgttcc ttcttctatc tgggtcctgt taaagcgggt 840
gtcagttgtg tcttttcacc tcgatttgc aattaataga attggggggg gaggaaatga 900
tgatgtcaat taagttttag gtttggcatg atcatcattc tcgatgatat tctcactttg 960
tcgcaaatct gcccattatcg taagaacaag ttccagaattt ttccctccac tatacgaactc 1020
cagtattatg tttacaatcc attggatgag tcgacgatc taagacccctt gtgcccgaa 1080
aaatctgtcc tttttggtag caaacccctgag gtcttttggg agataatgtt gaaaaccact 1140
acctattgaa gcccctgtttt ggctaatctg tgccaaactct gatgataacct gcttatgtgg 1200
attctttcc acactgctt catttttag tataaagact tagaaaaacta gaataatgct 1260
tttacaaata attaaaagta tggatgttc tgggtttttt ctttctttt agaaccctgt 1320
atttaaacaa gccttctttt taagtcttgc ttgaaattta agtctcagat cttctggata 1380
ccaaatcaaa aacccaacgc gtaaaacagg gcagtttgc ttgccttaat tttaaaaagc 1440
tttatgtata ctctataat atagatgcatt aaacaacact tcccccgttag tagcacatca 1500
acatacagca ttgtacatca caatgaaaat gtgtactt aaggattat atatataat 1560
acatatatac ctttgtaacc tttatactgt aaataaaaaaa gttgttttag tcaaaaaaaaaa 1620

```

(2) INFORMATION ON SEQ ID NO. 33:

(i) SEQUENCE CHARACTERISTIC:  
 (A) LENGTH: 2968 base pairs  
 (B) TYPE: Nucleic acid  
 (C) STRAND: individual  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vi) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:

## (2) INFORMATION ON SEQ ID NO. 34:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 6011 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:

ACGGGGCGCC	GGACGACCCG	CACATCTTAT	CCTCCACGCC	CCACTCGCAC	TCGGAGCGGG	60
ACCGCCCCGG	ACTCCCCCTC	GGGCCGGCCA	CTCGAGGAGT	GAGGAGAGAG	GCCGCCGGCC	120
CGGCTTGAGC	CGAGCGCAGC	ACCCCCCGCG	CCCCCGGCCA	GAAGTTGGT	TGAACCGGGC	180
TGCCGGGAGA	AACTTTTT	TTTTTCCCC	CTCTCCCGG	AGAGTCTCTG	GAGGAGGAGG	240
GGAACCTCCC	CGGCCCAAGG	CTCGTGGCT	CGGGGTCGCG	CGGCCGCAGA	AGGGCGGGG	300
TCCGCCCGCG	AGGGGAGGCG	CCCCCGGGG	CCCGAGAGGG	GGGTGAGGAC	CGCGGGCTGC	360
TGGTGCGGCG	GCGGCAGCGT	GTGCCCGCG	CAGGGGAGGC	GCCGCCCCGC	TCCCGGCCCG	420
GCTGCGAGGA	GGAGGCGGCG	GCGGCGCAGG	AGGATGTACT	TGGTGGCGGG	GGACAGGGGG	480
TTGGCCGGCT	GCGGCCACCT	CCTGGTCTCG	CTGCTGGGC	TGCTGCTGCT	GCCGGCGCAG	540
TCCGGCACCC	GGGCGCTGGT	CTGCCTGC	TGTGACGAGT	CCAAGTGCAG	GGAGCCCAGG	600
AACCGCCCGG	GGAGCATCGT	GCAGGGCGTC	TGCGGCTGCT	GCTACACGTG	CGCCAGCCAG	660
GGGAACGAGA	GCTGGGCGG	CACCTTCGGG	ATTACGGAA	CCTGCGACCG	GGGGCTGCGT	720
TGTGTCATCC	GCCCCCGCCT	CAATGGCGAC	TCCCTCACCG	AGTACGAAGC	GGCGTTTGC	780
GAAGATGAGA	ACTGGACTGA	TGACCAACTG	CTTGGTTTA	AACCATGCAA	TGAAAACCTT	840
ATTGCTGGCT	GCAATATAAT	CAATGGGAAA	TGTGAATGTA	ACACCATTG	AACCTGCAGC	900
AATCCCTTTG	AGTTTCAAG	TCAGGATAATG	TGCCTTTCAG	CTTTAAAGAG	AATTGAAGAA	960
GAGAAGCCAG	ATTGCTCCAA	GGCCCGCTGT	GAAGTCCAGT	TCTCTCCACG	TTGTCCTGAA	1020
GATTCTGTTC	TGATCGAGGG	TTATGCTCCT	CCTGGGGAGT	GCTGTCCTT	ACCCAGCCGC	1080
TGCGTGTGCA	ACCCCGCAGG	CTGCTGCGC	AAAGTCTGC	AGCCGGAAA	CCTGAACATA	1140
CTAGTGTCAA	AAGCCTCAGG	GAAGCCGGGA	GAGTGTGTG	ACCTCTATGA	GTGCAAACCA	1200
GTTCCTGGCG	TGGACTGCAG	GACTGTGGAA	TGCCCTACTG	TTCAGCAGAC	CGCGTGTCCC	1260
CCGGACAGCT	ATGAAACTCA	AGTCAGACTA	ACTGCAGATG	GTTGCTGTAC	TTTGCAACAA	1320
AGATGCGAGT	GTCTCTCTGG	CTTATGTGGT	TTCCCCGTGT	GTGAGGTGGG	ATCCACTCCC	1380
CGCATAGTCT	CTCGTGGCGA	TGGGACACCT	GGAAAGTGT	GTGATGTCTT	TGAATGTGTT	1440
AATGATACAA	AGCCAGCCTG	CGTATTTAAC	AATGTGGAAT	ATTATGATGG	AGACATGTTT	1500
CGAATGGACA	ACTGTCGGTT	CTGTCGATGC	CAAGGGGGCG	TTGCCATCTG	CTTCACCGCC	1560
CAGTGTGGTG	AGATAAACTG	CGAGAGGATAC	TACGTGCCG	AAGGAGAGTG	CTGCCAGTG	1620
TGTGAAGATC	CAGTGTATCC	TTTAATAAT	CCCGCTGGCT	GCTATGCCAA	TGGCCTGATC	1680
CTTGCCCCACG	GAGACGGGTG	GCAGGGAAAGAC	GACTGCACAT	TCTGCCAGTG	CGTCAACGGT	1740
GAAAGCCACT	CGCTTGCAGC	CGTCTGCGA	CAGACCTGCA	CAAACCTGT	GAAAGTGCCT	1800
GGGGAGTGTG	GCCCTGTGTG	CGAAGAACCA	ACCATCATCA	CAGTTGATCC	ACCTGCATGT	1860
GGGGAGTTAT	CAAATGCA	TCTGACACGG	AAGGACTGCA	TTAATGGTTT	CAAACGCGAT	1920
CACAATGGTT	GTCGGACCTG	TCAGTGCATA	AACACCCAGG	AACTATGTT	AGAACGTAAA	1980
CAAGGCTGCA	CCTTGAACCTG	TCCCTTCGGT	TTCCCTTACTG	ATGCCAAAAA	CTGTGAGATC	2040
TGTGAGTGCC	GCCCCAAGGCC	CAAGAACGTG	AGACCCATAA	TCTGTGACAA	GTATTGTCCA	2100
CTTGGATTGC	TGAAGAATAA	GCACGGCTGT	GACATCTGTC	GCTGTAAGAA	ATGTCCAGAG	2160
CTCTCATGCA	GTAAGATCTG	CCCCCTGGGT	TTCCAGCAGG	ACAGTCACGG	CTGTCTTATC	2220
TGCAAGTGC	GAGAGGCCTC	TGCTTCAGCT	GGGCCACCCA	TCCCTGTCGG	CACTTGTCTC	2280
ACCGTGGATG	GTCATCATCA	AAAAAATGAG	GAGAGCTGGC	ACGATGGGTG	CCGGGAATGC	2340
TACTGTCTCA	ATGGACGGGA	ATGTGTGCC	CTGATCACCT	GCCCCGGTGCC	TGCCTGTGGC	2400
AACCCCACCA	TTCACCCCTGG	ACAGTGTGTC	CCATCATGTG	CAGATGACTT	TGTGGTGCAG	2460
AAGCCAGAGC	TCAGTACTCC	CTCCATTGTC	CACGCCCTG	GAGGAGAATA	CTTTGTGGAA	2520
GGAGAACACGT	GGAACATTGA	CTCCTGTACT	CAGTGCACCT	GCCACAGCGG	ACGGGTGCTG	2580
TGTGAGACAG	AGGTGTGCC	ACCGCTGCTC	TGCCAGAAC	CCTCACGCCAC	CCAGGATTCC	2640
TGCTGCCAC	AGTGTACAGA	TCAACCTTT	CGGCCCTCT	TGTCCCGCAA	TAACAGCGTA	2700
CCTAATTACT	GCAAAATGA	TGAAGGGGAT	ATATTCTGG	CAGCTGAGTC	CTGGAAGCCT	2760
GACGTTTGT	CCAGCTGCAT	CTGCATTGAT	AGCGTAATT	GCTGTTTCTC	TGAGTCCTGC	2820
CCTTCTGTAT	CCTGTGAAAG	ACCTGTCTG	AGAAAAGGCC	AGTGTGTC	CTACTGCATA	2880
AAAGACACAA	TTCCAAAGAA	GGTGGTGTG	CACTTCAGTG	GGAAGGCCTA	TGCCGACGAG	2940
GAGCGGTGGG	ACCTTGACAG	CTGCACCCAC	TGCTACTGCC	TGCAGGCCA	GACCCCTCTGC	3000
TCGACCGTCA	GCTGCCCTCC	TCTGCCCTGT	GTTGAGGCCA	TCAACGTGGA	AGGAAGTTGC	3060
TGCCCAATGT	GTCCAGAAAT	GTATGTCCA	GAACCAACCA	ATATACCCAT	TGAGAAGACA	3120
AACCATCGAG	GAGAGGTG	CCTGGAGGTT	CCCCGTGGC	CCACGCCCTAG	TGAAAATGAT	3180
ATCGTCCATC	TCCCTAGAGA	TATGGGTCA	CTCCAGGTAG	ATTACAGAGA	TAACAGGCTG	3240
CACCCAAGTG	AAGATTCTTC	ACTGGACTCC	ATTGCCCTAG	TTGTGGTTCC	CATAATTATA	3300
TGCCCTCTCTA	TTATAATAGC	ATTCCCTATTC	ATCAATCAGA	AGAAACAGTG	GATACCACTG	3360
CTTGTGGTGT	ATCGAACACC	AACTAAGCCT	TCTTCCTTAA	ATAATCAGCT	AGTATCTGTG	3420
GACTGCAAGA	AAGGAACCGAG	AGTCCAGGTG	GACAGTCCCC	AGAGAATGCT	AAGAATTGCA	3480

GAACCAGATG CAAGATTCAAG TGGCTTCTAC AGCATGCAAA AACAGAACCA TCTACAGGCA 3540  
 GACAATTCT ACCAAACAGT GTGAAGAAG GCAACTAGGA TGAGGTTCA AAAGACGGAA 3600  
 GACGACTAAA TCTGCTCTAA AAAGTAAACT AGAATTGTG CACTTGCTTA GTGGATTGTA 3660  
 TTGGATTGTG ACTTGATGTA CAGCGCTAAG ACCTTACTGG GATGGGCTCT GTCTACAGCA 3720  
 ATGTGCAGAA CAAGCATTCC CACTTTCTT CAAGATAACT GACCAAGTGT TTTCTTAGAA 3780  
 CCAAAGTTT TAAAGTTGCT AAGATATATT TGCCTGTAAG ATAGCTGTAG AGATATTGG 3840  
 GGTGGGGACA GTGAGTTGG ATGGGGAAAG GGGTGGGAGG GTGGTGTGG GAAGAAAAAT 3900  
 TGGTCAGCTT GGCTCGGGGA GAAACCTGGT AACATAAAAG CAGTCAGTG GCCCAGAGGT 3960  
 TATTTTTTC CTATTGCTCT GAAGACTGCA CTGGTTGCTG CAAAGCTCAG GCCTGAATGA 4020  
 GCAGGAAACA AAAAAGGCCT TGCGACCCAG CTGCCATAAC CACCTTAGAA CTACCAAGACG 4080  
 AGCACATCAG AACCCCTTGA CAGCCATCCC AGGTCTAAAG CCACAAGTTT CTTTCTATA 4140  
 CAGTCACAAC TGCAGTAGGC AGTGAGGAAG CCAGAGAAAT GCGATAGCGG CATTCTCTA 4200  
 AAGCGGGTTA TTAAGGATAT ATACAGTTAC ACTTTTGCT GCTTTTATT TCTTCCAAGC 4260  
 CAATCAATCA GCCAGTCCCT AGCAGAGTCA GCACATGAAC AAGATCTAAG TCATTTCTTG 4320  
 ATGTGAGCAC TGGAGCTTT TTTTTTACA ACGTGACAGG AAGAGGAGGG AGAGGGTGAC 4380  
 GAACACCAGG CATTCCAGG GGCTATATT CACTGTTGT TGTTGCTTG TTCTGTTATA 4440  
 TTGTTGGTTG TTCATAGTT TTGTTGAAGC TCTAGCTAA GAAGAAACTT TTTTTAAAAA 4500  
 GACTGTTGG GGATTCTTT TCCTTATTAT ATACTGATTC TACAAAATAG AACTACTTC 4560  
 ATTTTAATTG TATATTATTC AAGCACCTT GTTGAAGCTC AAAAAAAATG ATGCCTCTT 4620  
 AACTTTAGC AATTATAGGA GTATTATGT AACTATCTT TGCTTCAAAA AACAAAAGTA 4680  
 TTTGTGTGCA TGTGTATATA ATATATATAT ATACATATAT ATTATACAC ATACAATTAA 4740  
 TTTTCTCTG TTGAATGTAT TTTTATGAGA TTTTAACCAAG AACAAAGGCA GATAAACAGG 4800  
 CATTCCATAG CAGTGCTTT GATCACTTAC AAATTTTTG AATAACACAA AATCTCATTC 4860  
 TACCTGCAGT TTAATTGGAA AGATGTGTGT GTGAGAGTAT GTATGTGTGT GTGTGTGT 4920  
 GTGTGTGCGC GCGCACGCAC GCCTTGAGCA GTCAGCATTG CACCTGCTAT GGAGAAGGGT 4980  
 ATTCCTTTAT TAAAATCTTC CTCATTGGA TTTGCTTCA GTGGTTTTC AATTGCTCA 5040  
 CTGGCCAGAG ACATTGATGG CAGTCTTAT CTGCATCACT AATCAGCTCC TGGATTTTT 5100  
 TTTTTTTTT TCAAACAATG GTTGAAACA ACTACTGAA TATTGTCAC AATAAGCTGG 5160  
 AAGTTTGTG TAGTATGCT CAAATATAAC TGACTGTATA CTATAGTGGT AACTTTCAA 5220  
 ACAGCCCTTA GCACTTTAT ACTAATTAAC CCATTTGTGC ATTGAGTTT CTTTTAAAAA 5280  
 TGCTTGTGT GAAAGACACA GATAACCCAGT ATGCTTAACG TGAAAAGAAA ATGTGTCTG 5340  
 TTTTGTAAAG GAACTTCAA GTATTGTGT AAATACTGG ACAGAGGTTG CTGAACCTTA 5400  
 AAAAAAAATTA ATTATTATTATA ATAATGACCT AATTATTAAC TCTGAAGATT AACCATTTT 5460  
 TTGTCTTAGA ATATCAAAA GAAAAGAAA AAGGTGTCT AGCTGTTGC ATCAAAGGAA 5520  
 AAAAAGATT ATTATCAAGG GGCAATATT TTATCTTTT CAAAATAAT TTGTTAATGA 5580  
 TACATTACAA AAATAGATTG ACATCAGCCT GATTAGTATA AATTGTGTG GTAATTATC 5640  
 CATTCTGGC ATAAAAAGTC TTTATCAAAA AAAATTGTAG ATGCTTGCTT TTTGTTTTT 5700  
 CAATCATGGC CATATTATGA AAATACTAAC AGGATATAGG ACAAGGTGTA AATTTTTA 5760  
 TTATTATTT AAAGATATGA TTTATCCTGA GTGCTGTATC TATTACTCTT TTACTTTGGT 5820  
 TCCTGTTGTG CTCTGTAAA AGAAAAATAT AATTTCCTGA AGAATAAAAT AGATATATGG 5880  
 CACTGGAGT GCATCATAGT TCTACAGTT GTTTTGTCT TCTCAAAA AGCTGTAAGA 5940  
 GAATTATCTG CAACTTGATT CTTGGCAGGA AATAAACATT TTGAGTTGAA ATCAAAAAAA 6000  
 AAAAAAAATTA A

## (2) INFORMATION ON SEQ ID NO. 34a:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1036 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34a:

Protein sequence derived from Seq. ID No. 34, Start: 454bp,

Stop: 3559bp

MYLVAGDRGL AGCGHLLVSL LGLLLLPARS GTRALVCLPC DESKCEEPRN RPGSIVQGVC 60  
 GCCYTCASQG NESCGGTFGI YGTCDRGLRC VIRPPLNGDS LTEYEAGVCE DENWTDDQLL 120  
 GFKPCNENLI AGCNIINGKC ECNTIRTCSN PFEFPSQDMC LSALKRIEEE KPDCSKARCE 180  
 VQFSPRCPED SVLIEGYAPP GECCPLPSRC VCNPAGCLRK VCQPGNLNL VSKASGKPGE 240  
 CCDLYECKPV FGVDCRTVEC PTVQQTACPP DSYETQVRLT ADGCCTLPTR CECLSGLCGF 300  
 PVCEVGSTPR IVSRGDGTPG KCCDVFECVN DTKPACVFNN VEYYDGDMMR MDNCRFCRCQ 360  
 GGVAICFTAQ CGEINCERYY VPEGECCPVC EDPVYPFNNP AGCYANGLIL AHGDRWREDD 420  
 CTFCQCVNGE RHCVATVCVGQ TCTNPVKVPG ECCPVCEEPT IITVDPPACG ELSNCTLTRK 480  
 DCINGFKRDH NGCRTQCIN TQELCSERKQ GCTLNCPPGF LTDDAQNCEIC ECRPRPKKCR 540  
 PIICDKYCPL GLLKNKHGCD ICRCKKCPPEL SCSKICPLGF QQDSHGCLIC KCREASASAG 600  
 PPILSGTCLT VDGHHHKNEE SWHDGCRECY CLNGREMCAL ITCVPVACGN PTIHPGQCCP 660  
 SCADDVVQK PELSTPSICH APGGEYFVEG ETWNIDSCTQ CTCHSGRVLC ETEVCPPLLC 720  
 QNPSRTQDSC CPQCTDQPPR PSLSRNNNSVP NYCKNDEGDI FLLAESWKPD VCTSCICIDS 780  
 VISCFSESCP SVSCERPVL KGQCCPYCIK DTIPKKVVCH FSGKAYADEE RWDLDSCTHC 840  
 YCLQGQTLCs TVSCPPLPCV EPINVEGSCC PMCPEMYVPE PTNIPIEKTN HRGEVDLEVp 900  
 LWPTPSENDI VHLPRDMGHL QVDYRDNRLH PSEDSSLDSI ASVVVPIIIC LSIIIAFLFI 960  
 NQKKQWIPLL CWYRTPTKPS SLNQLVSVD CKKGTRVQVD SSQRMLRIAe PDARFSGFYS 1020  
 MQKQNHQLQAD NFYQTV

(2) INFORMATION ON SEQ ID NO. 35:

(i) SEQUENCE CHARACTERISTIC:

(A) LENGTH: 716 base pairs  
 (B) TYPE: Nucleic acid  
 (C) STRAND: individual  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

```

gcagtacctg gagtgcctg caggggaaa gcgaaccggg ccctgaagtc cggggcagtc 60
acccgggct cctggccgc tctggggc 120
agaagtccag agggatcagc cccagaacac accctctcc cccggacgccc gcagcttct 180
ggaggctgag gaaggcatga agagtggct ccacctgctg gccgactgag aaaagaattt 240
ccagaactcg gtcctatccc acagattgag aaactatggt tcaagaagag aggacggggc 300
ttgagggaaat ctcctgatcc tccttatatg acctcaactt gaccataactt aacagtgttag 360
aaggctttt taaggctcta aatgtcaggg tctcccatcc cctgatgcct gacttgtaca 420
gtcagtgtgg agtagacggt ttctccacc cagggttgac tcagggggat gatctgggtc 480
ccattctggt cttaagaccc caaacaaggg ttttttcagc tccaggatct ggagccctcta 540
tctggttagt gtcgttaaccc ctgtgtgcct cccgttaccc catctgtcca gtgagctcag 600
ccccatcca cctaacaaggg tggccacagg gattactgag ggttaagacc ttagaactgg 660
gtctagcacc cgataagacg tcaataaaatg ttgttcctt ccacatcaaa aaaaaaa

```

(2) INFORMATION ON SEQ ID NO. 36:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 395 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

```

ccaatacttc attttttcatt ggtggagaag attgttagact tctaagcatt ttccaaataa 60
aaaagctatg atttgatttc caactttaa acattgcatt tcctttgcctt tttactacat 120
tctccaaaaa aaccttgaaa tgaagaaggc caccctttaaa atacttcaga ggctgaaaat 180
atgatttata cattggaaatc cttagccta tttgtatattt cttaactttt gcactttcac 240
gcccagtaaa accaaagtca gggtaaccaa ttttttttttta caaaatgtta aaacccttaat 300
tgcaggccct tttttaaattt attttaaaga ttacttaaca acatttagaca gtgcaaaaaaa 360
agaagcaagg aaagcattct taattctacc atcct

```

## (2) INFORMATION ON SEQ ID NO. 37:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 134 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

ccctcgagcg gcccgggg caggtacttt taccaccgaa ttgttcactt gactttaaga 60  
aaccataaaa gctgcctggc tttcagcaac aggccatatca acaccatggt gagtctccat 120  
aaggcacacc gtgt

## (2) INFORMATION ON SEQ ID NO. 38:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 644 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 38:

aaggcctgttg tcatggggga ggtgggtggcg ctgggtggcc actggcggcc gaggttagagg 60  
 cagtggcgct tgagttggc gggggcagcg gcagatttga ggcttaagca acttcttcgg 120  
 gggaaagagtg ccagtgcagc cactgttaca attcaagatc ttgatctata tccatagatt 180  
 ggaatattgg tggccagca atcctcagac gcctcactta ggacaaatga ggaaactgag 240  
 gcttggtgaa gttacgaaac ttgtccaaa tacacacaact tgtaaagggc acagccaaga 300  
 ttcagagcc a ggtgtaaaa attaaaatga acaaattacg gcaaagtttt aggagaaaga 360  
 aggatgtt a tggccagag gccagtcgtc cacatcagtgc gagacagat gaagaaggcg 420  
 ttcgcaccgg aaaatgtac ttcccgtta agtaccttgc ccatgttagaa gttgatgaat 480  
 caagaggaat gcacatctgt gaagatgtc taaaagattt gaaagctgaa aggaagttct 540  
 tcaaaggctt ctggaaaaa actggaaaaga aagcgtttaa agcagttct gtgggtctaa 600  
 gcagatggac tcagaggttt tggatgaaaaa actaaggacc tcat

## (2) INFORMATION ON SEQ ID NO. 39:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 657 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

ctttttgttt gggttttcca atgttagatgt ctcagtggaa tggcagata tactttgttc 60  
 cttatatgtt caccagtgtt aattatggac aaatacatta aaacaagggt tcctggccca 120  
 gcctccatc taatctctt gatactctt gaatctaagt ctgaggagcg atttctgaat 180  
 tagccagtgt tgtagccaact ttctgttagg aattgtatata gaataacctt tctttttcag 240  
 acctgctcag tgagacatct tggggatga agtagggaaa tagacatttgc tggaaaaaac 300  
 agaaaaatga gaacattaaa aagactcatt caagtatgag tataaaggc atggaaattc 360  
 tggccctttg agaaaaatga gaagaaaaaaa ttctgtcag cagtattcac tggatgtt 420  
 tttttgttt ttacacgaa tggaaaaatg atgtgttaatg ggtatagatt ttaatcagct 480  
 aacagtcaact ccagagattt tgatcagcac caatttcattt agtagtaatg atttaaaatgt 540  
 taagaaatac tactacattt aacattataa agtagagttc tggacataac tgaaaatttag 600  
 atgtttgtt caatagaaat ttgtccac ttgtatccc aacaaaatta tcggaaac

## (2) INFORMATION ON SEQ ID NO. 40:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1328 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 40:

```

acaatttaa aataaactagc aattaatcac agcatatcac gaaaaagttac acagttagtt 60
ctggtagtt ttgttaggtt cattatggttt agggtcggtt agatgtatata aagaacctac 120
ctatcatgct gtatgtatca ctcattccat tttcatgttc catgcatact cgggcattcat 180
gctaataatgtt atcccttttaa gcactctcaa gggaaacaaaa gggcctttta tttttataaa 240
ggtaaaaaaaa attccccaaa tattttgcac tgaatgttacc aaaggtgaag ggacattaca 300
atatgactaa cagcaactcc atcacttgag aagtataata gaaaatagct tctaaatcaa 360
acttccttca cagtggccgtt tctaccacta caaggactgtt gcatctaagt aataattttt 420
taagattcac tataatgttcat agtattgtat gcattttttt aaaaatgcatt agactctt 480
ccatccatca aataactttac aggtatggcat ttaatacaga tatttcgtat ttccccact 540
gctttttttt ttgtacagcat cattaaacac taagctcagt taaggagcca tcagcaacac 600
tgaagagatc agtagataga attccattttt ccctcatcag tgaagacacc acaaattgaa 660
actcagaact atatttctaa gcctgcattt tcactgtatgc ataattttct tagtaatatt 720
aagagacatgtt tttctatggt catctccaaa actgcattgac atcacttagtc ttacttctgc 780
ttaattttt gagaaggat tttttttttt aattgtttt gggatttactc cacatctttt 840
tttattttt gactaatcag attttcaataa gaggtaatgggaa aatttggggg tcataaaagc 900
attggatttga catatggttt gccaggcttat gggtttacag gcattggcca aacattttttt 960
tgagatctat atttataagc agccatggaa ttccattttt gggatgttgg caatcttaca 1020
ttttagatag gtcataatgca tagttttcat aggtttttttaaactgaa ttgtcttcct 1080
gtgagtaag ctatgtttac tactgggacc ctcaagagga ataccactta tgttacactc 1140
ctgcactaaa ggcacgtact gcagttgtt gaaatgttct gaaaaagggt tatagaaatc 1200
tggaaataag aaaggaagag ctctctgtat tctataattt gaaagagaaaa aaagaaaaac 1260
ttttaactgg aatgttagt ttgtacttat tgatcatgaa tacaagtata tatttaattt 1320

```

## (2) INFORMATION ON SEQ ID NO. 41:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 987 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 41:

aacagagact ggcacaggac ctcttcattg caggaagatg gtagtgttagg caggtAACAT 60  
 tgagctcttt tcaaaaaagg agagctttc ttcaagataa ggaagtggta gttatgggtgg 120  
 taaccccccgg ctatcagtcc ggatgggtgc caccctccct gctgttaggat ggaagcagcc 180  
 atggagtggg agggaggcgc aataagacac ccctccacag agcttggcat catggaaagc 240  
 tggttctacc tcttcctggc tcctttgttt aaaggccctgg ctgggagcct tcctttggg 300  
 tgtctttctc ttctccaacc aacagaaaag actgctttc aaaggtggag ggtcttcatg 360  
 aaacacagct gccaggagcc caggcacagg gctgggggccc tggaaaaagg agggcacaca 420

ggaggaggga ggagctggta gggagatgct ggctttacct aaggcttcga aacaaggagg 480  
 gcagaatagg cagaggcctc tccgtcccag gcccattttt gacagatggc gggacggaaa 540  
 tgcaatagac cagcctgcaa gaaagacatg tgttttgatg acaggcagtg tggccgggtg 600  
 gaacaagcac aggcccttggc atccaatggc ctgaatcaga acccttaggccc tgccatctgt 660  
 cagccgggtg acctgggtca attttacct ctaaaagcct cagtctcctt atctgcaaaa 720  
 tgaggcttgt gatacctgtt ttgaagggtt gctgagaaaa ttaaaagataa gggtatccaa 780  
 aatagtctac ggcataccca ccctgaacgt gcctaatttc gtaagctaaag cagggtcagg 840  
 cctggtttagt acctggatgg ggagagtatg gaaaacatac ctgccccgcag ttggagttgg 900  
 actctgtctt aacagttagcg tggcacacag aaggcactca gtaaaatactt gttgaataaa 960  
 tgaagtagcg atttgggtgtg aaaaaaaa

## (2) INFORMATION ON SEQ ID NO. 42:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 956 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 42:

```

cgacgggtgg ggcggacgcg tgggtgcagg agcagggcgg ctggcactg ccccaaccaa 60
ggaaggagcc cctgagtcgg cctgcgcctc catccatctg tccggccaga gccggcatcc 120
ttgcctgtct aaagccttaa ctaagactcc cggccgggc tggccctgtg cagaccttac 180
tcagggatg ttacactggt gctcgggaag ggaggggaag gggccggga gggggcacgg 240
caggcgtgtg gcagccacac gcaggcggcc agggcggcca gggacccaaa gcaggatgac 300
cacgcaccc cacgcccactg cttccccca atgcattttg aacccaaatgc taaactgagc 360
tcgcagcccc cgcccccctcc ctccgcctcc catcccgctt agcgtctgg acagatggac 420
gcaggccctg tccagccccc agtgcgcctcg ttccggtccc cacagactgc cccagccaa 480
gagattgctg gaaaccaagt caggccaggt gggcggacaa aaggccagg tgcggcctgg 540
ggggAACGGA tgctccgagg actggactgt tttttcaca catcggttgc gcagcgggtgg 600
gaaggaaagg cagatgtaaa tgatgtgttgg ttttacaggg tatattttt ataccttcaa 660
tgaattaatt cagatgtttt acgcaaggaa ggacttaccc agtattactg ctgctgtgct 720
tttgcgttctt gcttaccgtt caagaggcgt gtgcaggccg acagtcgggtt accccac 780
tcgcaggacc aaggggggcgg ggactgctgg ctcacgcctt gctgtgtcct ccctccctc 840
ccttccttgg gcagaatgaa ttgcgtgcgtt attctgtggc cgccatctgc gcagggtgg 900
ggtattctgt catttacaca cgtcggttcta attaaaaagc gaattataact ccaaaa

```

## (2) INFORMATION ON SEQ ID NO. 43:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 536 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 43:

```
aaataaacac ttccataaca ttttgtttc gaagtctatt aatgcaatcc cactttttc 60
cccctagttt ctaaatgtta aagagagggg aaaaaaggct caggatagtt ttcacctcac 120
agtgttagct gtcttttatt ttactcttgg aaatagagac tccattaggg ttttgacatt 180
ttgggaaccc agttttacca ttgtgtcagt aaaacaataa gatagttga gagcatatga 240
tctaaataaa gacatttcaa gggtagttt gaattctaa agtagtaat agccaaataag 300
cattctcatc ccttaacaga caaaaactta ttgtcaaaa gaattagaaa aggtgaaaaat 360
atttttcca gatgaaactt gtgccacttc caattgacta atgaaataca aggagacaga 420
ctggaaaaag tgggttatgc caccttaaa accctttctg gtaaatatta tggtagctaa 480
agggtggttt ccccgccacc tggacctgga caggtagggt tccgtggta accagt
```

(2) INFORMATION ON SEQ ID NO. 44:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1630 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 44:

ggggagggac gagtatggaa ccctgaaggt agcaagtcc a ggcactggcc tgaccatccg 60  
 gctccctggg caccaagtcc caggcaggag cagctttt ccatcccttc ccagacaagc 120  
 tctattttt a tcacaatgac cttagagag gtctccagg ccagctcaag gtgtccact 180  
 atcccctctg gaggaaagag gcaggaaaat tctcccccggg tccctgtcat gctactttct 240  
 ccatcccagt tcagactgtc caggacatct tatctgcagc cataagagaa ttataaggca 300  
 gtgatttccc ttaggcccag gacttgggc tccagctcat ctgttccttc tgggcccatt 360  
 catggcagg tctgggctca aagctgaact ggggagagaa gagatacaga gctaccatgt 420  
 gactttacct gattgcctc agtttgggt tgcttattgg gaaagagaga gacaaagagt 480  
 tacttggta c gggaaatatg aaaagcatgg ccaggatgca tagaggagat tctagcaggg 540  
 gacaggattt gctcaqatga cccctgaggg ctcttccagt ctgaaatgc attccatgtat 600  
 attaggaagt cgggggtggg tgggtgttgt gggctagttt ggtttgaatt taggggcccga 660  
 ttagcttggg tacgtgacca ggggtttaag tttaggtctg cctgttatttc tggtccctt 720  
 ggaatgtcc ccttcttcag tgcagacct cagtccca gtcctatcg tgcccaaaaa 780  
 agtagacatt atccctggccc atcccttccc cagtgcacte tgacctagat agtgcttgg 840  
 gcccagtgc ctggggggc ctggctgcag gcccctactg gttccctaaa ctttgggtggc 900  
 tgtgattcag gtccccagg gggactcagg gaggaaatatg gctgagttct gtatttcca 960  
 gagttggctg gtagaggcctt cttagaggttc agaaatattag cttcaggatc agctgggggt 1020  
 atgaaattgg ctgaggatca aacgtatgtt ggtgaaagga taccaggatg ttgctaaagg 1080  
 tgagggacag tttgggtttt gggacttacca ggggtatgtt agatctggaa cccccaagtg 1140  
 aggctggagg gaggtaaggt cagtatggaa gatagggttg ggacagggtg ctttggaaatg 1200  
 aaagagtgc ctttagaggc tccctggcc tcaggaatgc tcctgctgct gtgaagatga 1260  
 gaaggtgctc ttactcagtt aatgtatgat gactatattt accaaagccc ctacctgctg 1320  
 ctgggtccct ttagcacag gagactgggg ctaaggccc ctcccaggga agggacacca 1380  
 tcaggcctct ggctgaggca gtagcataga ggatccattt ctacctgcat ttcccagagg 1440  
 actagcagga ggcagcctt agaaaaccggc agttcccaag ccagcgcctg gctgttctct 1500  
 cattgtcaact gcccctctcc caacctctcc tctaaccac tagagattgc ctgtgtcctg 1560  
 cctcttgctt cttgtagaat gcagctctgg ccctcaataa atgcttcctg cattcatctg 1620  
 caaaaaaaaaa

## (2) INFORMATION ON SEQ ID NO. 45:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 169 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

## (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

```

tcttttgctt ttagctttt atttttgtat taacaggagt cttattacac ataggctgta 60
taaaactggt ttatgatctt cagtctgatt ccagtgctgc ataacttagat aacgtatgaa 120
ggaaaaacga cgacgaacaa aaaagtaagt gcttggaaaga cttagttga

```

## (2) INFORMATION ON SEQ ID NO. 46:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 769 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:

```

tgcaggcat atttactatc ggcaataaaa ggaagcaaaag cagttataag cagcggtgga 60
atttgtcgct ttcactttt ataaagtgtc acataaaaatg tcataatttcc aaatttaaaa 120
acataactcc agttcttacc atgagaacag catggtgatc acgaaggatc ttcttgaaaa 180
aaacaaaaac aaaaacaaaaa aacaatgatc tcttctgggt atcacatcaa atgagataca 240
aagggttact aggcaatctt agagatctgg caacttattt tatataaag gcatctgtga 300
ccaagagacg ttatgaattt aatgtacaaa tgtattatgt ataaatgtat taaatgcaag 360
cttcataataa tgacaccaat gtctctaagt tgctcagaga tcttgactgg ctgtggccct 420
ggccagctcc tttcctgata gtctgattct gccttcataat ataggcagct cctgatcatc 480
catgccatg aatgagaaaa caagcatgga atatataaac tttaacatta aaaaatgttt 540
tattttgtaa taaaatcaaa tttcccatgt aaaccttcaa aaactttgca gaatgaggtt 600
ttgatataatg tttacaagta gtaccttctt agtgcagaa aacatcatta tttctgtctg 660
cctgcctttt tttttttaaa aatgaagact atcattgaaa caagttgtc ttcagtatca 720
ggacatgttg acggagagga aaggttaggg atagaagcc

```

## (2) INFORMATION ON SEQ ID NO. 47:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 2529 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:

tttagttcat agtaatgtaa aaccatttgt ttaattctaa atcaaatcac tttcacaca 60  
gtaaaaattha gtgactggtt aaggtgtgcc actgtacata tcatttcatttt ctgactgggg 120  
tcaggacctg gtcctagtcc acaagggtgg caggaggagg gtggaggctaa agaacacaga 180  
aaacacacaaa aagaaaggaa agctgccttgc gcagaaggat gaggtggta gcttgcgcag 240  
ggatgggtggg aagggggctc cctgttgggg ccgagccagg agtccccaaat cagctctcc 300  
gccttactta gctccctggca gagggtgagt gggacactac gaggttcaaa atcaaatggc 360  
atttggccag cctggcttta ctaacaggtt cccagagtgc ctctgttggc tgagctctcc 420  
tgggctcaact ccatttcattt gaagagtccaa aatgattcat tttccttaccc acaacttttc 480  
attattcttc tggaaacccca tttctgttgc gtcatcttgc cttaaatctt ctctccctcc 540  
actagttggg gccactgcac tgaggggggtt cccaccaattt ctctcttagag aagagacact 600  
ccagaggccc ctgcaactttt gcggtttcc agaagggtat aaaaagagca ctcttgatgt 660  
ggtgcctcagg aatgtttaaa atctatcaagg cacactataa agctgggtt ttcttcctac 720  
caagtggattt cggcatatga accacactactt caatacttata tattttgttgc gtttaaacac 780  
tgaactctgg tggacagg tacaatggag aagagatggg gactgttgcag aggggagggc 840  
ttcccttcatc ttccctcaaga tctttgttgc cataaactat gcagtcataa ttgagaaaaaa 900  
gcaatagatg gggcttccat ccattttttt gttattgttgc gggtagcca ggagcagtgt 960  
ggatggcaaa gttaggagaga ggcccaggaa aagccatc tccctccagc ttgggggtct 1020  
ccagaaagag gctggatttc tggatggaaag cctagaaggc agagcaagaa ctgttccacc 1080  
aggtgaacag tccttacccgc ttggatccat agtccctcaa taagattcag aggaagaagc 1140  
ttatgaaact gaaaatcaaa tcaaggatattt gggaaagaata atttcccttc gattccacag 1200  
gagggaaagac cacacaatattt cattgttgc gggctccca aggccctgccc acctggctt 1260  
acaaatcatc aggggttgcc tgcttggcag tcacatgttccctgggtttt agcacacata 1320  
caaggagttt tcaggaaactt ctatcaagcc atacaaaat cagggtcaca tgggggtttc 1380  
ccctttccat gccttccat aaaagacaac ttggcttctg aggatgggtgg tcttttgcatt 1440  
gcagttggc tgacttgaca aagcccccag tttcctgtgg caggttctgg gagaggatgc 1500  
attcaagctt ctgcagccta ggggacaggg ctgcttgcattt agtttattactt gcctcgagc 1560

tccaaatccc accaaagtcc tgactccagg tctttcctaa tgcacagtag tcagtctcag 1620  
 cttcggcagt attctcggct gtatgttctc tggcagagag aggcagatga acatagttt 1680  
 agggagaaa ctgatggaa acctgtgagt taagccacat gtctcaccag gaataattt 1740  
 tgccaggaaa ccaggaagtc attcaagttt ttctctgagg ccaaagacac tgagcacagc 1800  
 ccagagccaa taaaagatct ttgagtcctt ggtgaattca cgaagtgacc ccagctttag 1860  
 ctactgcaat tatgatttt atggacacgc aatttcttgc atctctacag aggaagaaga 1920  
 gggggagtgg gaggggaaagg aaagagaaca gagcggcact gggatttgaa agggaaacct 1980  
 ctctatctga ggagccccca ctggcttcag aagcaactt ccaagggta tttaaagaca 2040  
 taaaaatttc cagaaatacc atttggtgca tccctttgtt tctgtaatat taaactcagg 2100  
 taaaattata ctctgacagt ttctctttt ctgccttc cctctgcaga gtcaggacct 2160  
 gcagaactgg ctgaaacaag atttcatggt gtcacccatg agagatgact caatgccaag 2220  
 gcctgaagtt atagagtgtt tacagcggtg gcgatattca ggggtcatcg ccaactggc 2280  
 tcgagttcca aagctctgat gaagaaacaa gactccttga tgtgttactg atcccactga 2340  
 ttccaggagt caagattagc caggaagcca aacaccagga gttgggggtgg cacgtcacca 2400  
 gtccagagcc ctgccacgga tgtacgcagg agcccagcat taggcaatca ggagccagaa 2460  
 catgatcacc agggccacaa attaggaagag gcgtgacagg aactgctcgt ccacataacct 2520  
 ggggtgtcc

(2) INFORMATION ON SEQ ID NO. 48:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1553 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vi) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:

tttttttttt tttttgattt ctgggacaat taagctttat ttttcatata tataatatatt 60  
 ttcatatata tatatacata cataataaaa ggaaacaatt tgcaaattt cacacctgac 120  
 aaaaccatat atacacacat atgtatgcat acacacagac agacacacac acccgaagct 180  
 cttagccaggc ccgttttcca tccttaagta ccatttctc atttgggccc ttcttagggtt 240  
 ggggcccctga gcttggttt tagaagttt gtagctaatat aaccatagct ttaatcccc 300  
 tgaaggacag ttagacactc atctttgtct gctcccgct gcctttagt tttacgtat 360  
 ccatcaagag ggctatggga gccaagtgaa cacggggat tgaggctaat tcacctgaa 420  
 tcgaaaacag cggccagctt cctcaccgca ggcacgcgtc ttttcttcga 480  
 gacggagtct cgctgtgtt cccaggctgg agtgcgtt cacggtctcg gctcaactgca 540  
 agctccaccc cctggattca taccatttctc ctgctttagt cttccggatgactt 600  
 tagtgccaa ccactacgccc tagctaattt tttttgtat ttttagtaga gacagggttt 660  
 caccgtgtta gccaggatgg ttcgttctg acttttgtat ccggccgcct cggcctccca 720  
 aagtgtctggg attacaggcg tgagccacca cacctggccc cggcacgtat ttttaagga 780  
 atgacaccag ttccctggctt ctgacccaaag aaaaatgtc acaggagact ttgaagaggc 840  
 agacaggagg gtggtggcag caacactgca gctgcttctg gatgctgctg ggggtgcctc 900  
 cggagcgggt gtgaacacgca cacttcaaca tgagcaggcg cttggctccg gtgtgtcctc 960  
 acttcagttt tgcacccatggc tggtggaaac cagcccttgg ggcaggaaac cagctcagag 1020  
 aggctaccca gctcagatgc tggcaggagc caggtattta cagccataat gtgtgtaaag 1080  
 aaaaaacacg ttctgcaaga aactcttcttta cccgctcggg agactggggc tccttgctt 1140  
 ggatgagctt cactcaacgt ggagatgggt gtggactgtt ccctgaaaaag cgggccttgc 1200  
 agggccaagt gaggtcttca ggtccttaac ccagtggccc tctgaaaggg ggtgtgcagg 1260  
 cgaggggagc aggaggcttc tctctagttc ctttggagggc tttggctgag agaagagtga 1320  
 gcagggagct gggaatggtc cagggcaggga agggagctga agtgattcgg ggctaattgcc 1380  
 tcagatcgat gtattttctt ccctggcttc ccggagccctt cttgtcaccg ctgctgcctc 1440  
 gcaggaggcc catctttctt gggagcttat ctgacttaac ttcaactaca agttcgctct 1500  
 tacagagaccg ggggttagcgt gatctctgc ttccctgagc gcctgcacgg cag

## (2) INFORMATION ON SEQ ID NO. 49:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 921 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 49:

ctgtggtccc agctactcag gaggctgagg cgggaggatt gcttgagccc aggagttgga 60  
 tggcagtgcaccattgcctccactctggccacggagcaataccct 120  
 gtctcagaaa acaaacaaca aaaagcagaa acgctgaagg ggtcggttacggaaaacc 180  
 gcctgtcaga acacttggtactcctaccc cagatcagtgcacctggaa tgagggttgg 240  
 tcccgaggatcttccaa gctgttgcc accagacccgcatggaaac cctggccaca 300  
 gaaggcctccc ggggagtgag ccagagcctg gaccgctgtctgatgtgtc tgggggtggag 360  
 ggagggtggg gagtgtgcaaa ggggtgtgtgtgccccgggggtgtcatggcaagcatg 420  
 tgcgtgcctgtgtgtgtcgctggccctccctgcagccgtcggtgtatctccctccagc 480  
 cccttcgcca ccttctgagc attgtctgtc cacgtgagac tgcccagaga cagcagagct 540  
 ccacgtggttttaaggggag acctttccctggacctgggggtgtctcgccgtatctcatgac 600  
 caggtgctaa atgacccgac atgcatcacc tgccttcga tgaccaacctccctgtccccc 660  
 gtcccgctgacctgcccccg tggcgtctca cggtgatgcc tgcctctgac attgggtgttc 720  
 actgttagcaa actacattct ggatgggaat tttcatgtac atgtgtggca tggaaaat 780  
 ttcaaaataaa atggacttga tttagaaagc caaaaagctgtgtggcccttccagcacgga 840  
 tactttgacc tcttgccctac aacccttccctgggtccga ggctggtagcttggact 900  
 tcagatggttggggcggtt g

## (2) INFORMATION ON SEQ ID NO. 50:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 338 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 50:

atgatctatc tagatgccct accgtaaaat caaaacacaa aaccctactg actcattccc 60  
 tcccttcag atattacccc atttctctac ttcccattgt agccaaactt tccaaaaatt 120  
 catgttctgttcttcatttccatgttcaaa cccaccctgttcttagtacc acccctcagt 180  
 aacgacccatcgctgggtaga aacaaatgtc agcatgatac cataactcaat gatccttcgt 240  
 cactgttgatcttcatca ttccatggcc ttactttccc tctcagcgccttcttggat 300  
 gtaagaaact ttctttcttg aattcttggatcttggat

## (2) INFORMATION ON SEQ ID NO. 51:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1191 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 51:

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ctagcaagca ggtaaacgag ctttgtacaa acacacacag accaacacat ccggggatgg 60
ctgtgtgttgc tagagcaga ggctgattaa acactcagtgt tggctgtct ctgtgccact 120
cctggaaaat aatgaattgg gtaaggaaca gttataaga aaatgtgcct tgctaaactgt 180
gcacattaca acaaagagct ggcaacttcctt gaaggaaaag ggcttgtgcc gctgcgttc 240
aaacttgtca gtcaactcat gccagcagcc tcagcgtctg cctcccccagc acaccctcat 300
tacatgtgtc tggctgtcgtc gatctgtcga tctgctcggaa gacgctcctg acaagtcggg 360
aatttctcta tttctccact ggtgaaaaga gcggatttctt ccctgcttctt cttctgtcac 420
ccccgtcctt ctccccccagg aggctccttgc atttatgtt gcttggact tgcttccccg 480
tctgactgtc cttgacttctt agaatggaaag aagctgagct ggtgaaggaa agactccagg 540
ccatcacaga taaaagaaaa atacaggaag aaatctcaca gaagcgtctg aaaatagagg 600
aagacaaaact aaagcaccag catttgaaga aaaaaggcctt gagggagaaaa tggcttcttag 660
atggaatcag cagcggaaaa gaacaggaag agatgaagaa gaaaaatcaa caagaccagc 720
accagatcca gtttcttggaa caaagtatcc tcaggcttgc gaaagagatc caagatctt 780
aaaaagctga actgcaaatc tcaacgaagg aagaggccat tttaaagaaaa ctaaagtcaa 840
ttgagcggac aacagaagac attataagat ctgtgaaagt gaaagagaaaa gaaagagcag 900
aagagtcaat tgaggacatc tatgctaata tccctgaccc tccaaagtcc tacatacctt 960
ctaggttaag gaaggagata aatgaagaaaa aagaagatga tgaacaaaaat aggaaagctt 1020
tatatgccat gaaatattaaa gttgaaaaag acttgaagac tggagaaaaat acagttctgt 1080
cttccaaatac ctctggccat cagatgactt taaaaggtaac agggtaaaaa gtttaagatg 1140
atgggcaaaa gtccagtgtt ttcagtaaag tgctaatcac aagttggagg t

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## (2) INFORMATION ON SEQ ID NO. 52:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1200 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 52:

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aacaggact ctcactctat caaccccgagg ctggagtcgc gtgcgcac cctggctccc 60
tgcaacctcc gcctccagg ctcagaac tctcctgcct cagtcgtct agtagctggg 120
actacaggca cacaccacca tgcccagcca attttgcata ttttgcata gacagggttt 180
cgcccttctgt ccaggccggc atcatatact ttaaatcatg cccagatgac ttaataacct 240
aatacaaat atcagggtgg tttaaaaata attgctttt tattattttt gcattttgc 300
accaaccta atgctatgta aatagttgtt atactgttgc ttaacaacag tatgacaatt 360
ttggctttt ctttgtatta ttttgtattt tttttttta ttgtgtggc tttttttttt 420
ttctcatgtt ttcaattcc tccttgggt aatccatgga tgcaaaaccc acagatatga 480
agggctggct atatatgcat tgatgattgt cctattatata tagttataaaa gtgtcattta 540
atatgtatgtt aaagttatgg tacagtggaa agagtagttt aacacataaa catttggacc 600
tttcaagaaa ggtagcttgg tgaagttttt caccttcaaa ctatgtccca gtcaggggctc 660
tgctactaat tagctataat cttgcacaa attacatcac ctttgagtc tcaattttttt 720
acctgtaaaaa tggaaagaact ggataactctc taaggtcaact tccagccctg tcatttttata 780

actctgttat gctgagggaaag aaattcacat tttgttaact gtatgagtca aactgaaaat 840
gattattaaa gtggggaaaaa gccaatttgc tctcttagaa agtcacta aattttgagaa 900
gaataatctt ttcattttttaa aatatttttta aagggtttgac ctattttttt 960
agagatgggg tctcaactctg tcacccagac tggagttacag tggcacaatc atagctcact 1020
gctgcctcaa attcatgggc tcaagtgtac tctcctgcctc tgcctccaga gtagctgcga 1080
ctatgggcat gtgccaccac gcctggctaa catttgcata gaccttataa tttattgtga 1140
tttataatctt tttttttttt tctttttttt ttttttacaa aatcaaaaaat acttatttttq 1200

```

(2) INFORMATION ON SEQ ID NO. 53:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 989 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 53:

aagccaccac tcaaaaacttc ctatacattt tcacagcaga gacaagtcaa catttatttt 60  
tatgcctttc ttccatatgtg tatttcaagt cttttcaaa acaaggcccc aggactctcc 120  
gattcaatta gtccttgggc tggtcgactg tgcaggagtc cagggagcct ctacaaaatgc 180  
agagtgactc tttaccaaca taaaccctag atacatgcaa aaagcaggac ctttcctcca 240  
gaaatgtgcc atttcagatg cacagcaccc atgcagaaaa gctggaattt tccttggac 300  
cgactgtgat agaggtgctt acatgaacat tgctactgtc tttcttttt tttgagacag 360  
gtttcgcttg tgcccgaggct gagtgcaatg cgtgatctca ctcactgcaa ttccacaccttcc 420  
aggttcaagc atttcctgc tcagcctcct agtagctggg ttacaggcac tgccaccatg 480  
ccggctaatt ttgtattttt gtagagatgg atttctccat ttggtcaggc ggtctcgaac 540  
cccaacctca gtgatctgcc acctcagcct cctaagtgtt ggattacagg atgagccacc 600  
cgaccggcca ctactgtctt tctttgaccc ttccagtttca gaagataaag aggaaataat 660  
ttctctgaag tacttgataa aatttccaaa caaaacacat gtccacttca ctgataaaaaa 720  
atttaccgca gtttggcacc taagagtatg acaacagcaa taaaaagtaa tttcaaagag 780  
ttaagatttc ttcaaaaa tagatgattc acatcttcaa gtccttttgg aatcagttt 840  
ttaatattat tcttcctca tttccatctg aatgactgca gcaatagttt tttttttttt 900  
ttttttttttt ttgcgagatg gaatctcgct ctgtcgccca gcgggagtgc actggcgcaa 960  
gcccggctca ccgcaatctc tgccaccccg

(2) INFORMATION ON SEQ ID NO. 54:

(i) SEQUENCE CHARACTERISTIC:  
(A) LENGTH: 250 base pairs  
(B) TYPE: Nucleic acid  
(C) STRAND: individual  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:  
(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:  
(A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 54:

catttccccca ttggtcctga tggtaagat ttagttaaag aggctgtaag tcaggttcga 60  
gcagaggcta ctacaagaag taggaaatca agtccctcac atgggctatt aaaacttaggt 120  
agtggtggag tagtgaaaaa gaaatctgag caacttcata acgtaactgc ctttcaggga 180  
aaagggcatt ctttaggaac tgcatactggt aacccacacc ttgatccaag agcttagggaa 240  
acttcagttg

## (2) INFORMATION ON SEQ ID NO. 55:

## (i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 2270 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

## (vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

## (vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 55:

gcgcggccga gcagcgccccg cgccctccgc gccttctccg ccgggacctc gagcgaaaga 60  
 ggccccgcgc ccgcccagcc ctgcctccc tgcccacccgg gcacaccgcg ccgcacccccc 120  
 gaccccgctg cgcacggccct gtcgcgtgca caccagctt tgccgcgtctt cgtcgcgcg 180  
 ctcgcggccgg gctactctcg cgccacaa tgagctcccg catcgccagg gcgctcgcc 240  
 tagtcgtcac ccttctccac ttgaccaggc tggcgctctc cacctgcccc gctgcctgca 300  
 actgccccct ggaggcgccc aagtgcgcgc cgggagtcgg gctgggtccgg gacggctgca 360  
 gctgcgttaa ggtctgcgc aagcagctca acgaggactg cagcaaaaacg cagccctgca 420  
 accacaccaa ggggctgaa tgcacacttcg gcgccaaagtc caccgcctcg aaggggatct 480  
 gcagagctca gtcagagggc agaccctgtg aatataactc cagaatctac caaaacgggg 540  
 aaagtttcca gcccaactgt aaacatcagt gcacatgtat tgcgtggcc gtcggctgca 600  
 ttccctctgtg tcccccaagaa ctatctctcc ccaacttggg ctgtcccaac cctcggctgg 660  
 tcaaagttac cgggcagtcg tgcaggagg gggtctgtga cgaggatagt atcaaggacc 720  
 ccatggagga ccaggacggc ctccttggca aggagctggg attcgatgcc tccgaggtgg 780  
 agttgacgag aaacaatgaa ttgattgcag ttggaaaagg cagctactg aagcggctcc 840  
 ctgttttgg aatggagcc cgcacccat acaacccttt acaaggccag aaatgtattg 900  
 ttcaaaacaac ttcatggcc cagtgctcaa agacattgtgg aacttgtatc tccacacgag 960  
 ttaccaatga caaccctgag tgccgccttg taaaagaaac cccgattttg gaggtgcggc 1020  
 cttgtggaca gccagtgtac agcagcctga aaaaaggccaa gaaatgcagc aagaccaaga 1080  
 aatccccca aaccgtcagg ttacttacg ctggatgttt gagtgtgaag aaataccggc 1140  
 ccaagtaactg cggttctgc gtggacggcc gatgctgcac gccccagtc accaggactg 1200  
 tgaagatgcg gttccgcgtc gaagatgggg agacatttc caagaacgtc atgatgatcc 1260  
 agtcctgcaat atgcaactac aactgcccgc atgcataatga agcagcgttt cccttctaca 1320  
 ggctgttcaa tgacattcac aaattttaggg actaaatgct acctgggtt ccagggcaca 1380  
 cctagacaaa caagggagaa gagggtcaga atcagaatca tggagaaaat gggcggggg 1440  
 ggtgtgggtg atgggactca ttgtgaaaag gaagccttgc tcatttcttgc ggagcattaa 1500  
 ggtatttcga aactgccaag ggtgtgggtg cggatggaca ctaatgcagc cacgatttgg 1560  
 gaatactttg cttcatagta ttggagcaca tggtaacttgc tcattttggc gcttggag 1620  
 ttgatgactt tctgtttct gtttgcataat tatttgcataat ttttttttgc tctaggctt 1680  
 tttcccttttgg ggttctaca gtcgtaaaag agataataag attagtttgc cagttaaag 1740  
 cttttattcg tcctttgaca aaagtaaatg ggaggccatt ccattcccttc ctgaaggggg 1800  
 acactccatg agtgcgtgtc agaggcagct atctgcactc taaactgcaa acagaaaatca 1860  
 ggtgttttaa gactgaatgt ttatatttgc aaaaatgtac tttttggag ggagggggaaa 1920  
 tgtaatactg gaataatttgc taaaatgattt taattttata ttcaatgtaaa agattttttt 1980  
 tatggattttaa accatttaat aaagaaaat ttaacatata tctgagttgtc tgccattcgg 2040  
 tattttttaga ggtgctccaa agtcatttagg aacaacctag ctcacgtact caattattca 2100  
 aacaggactt attgggatac agcagtgaat taaagcttata aataaagata atgattgctt 2160  
 ttataccctc agtagagaaaa agtctttgca tataaagtaa ttttttttttacatgtattt 2220  
 aacacgacat tgcgtatgc acaataaaga ttctgttttttgc aaaaaaaaaaaaaaaa

## (2) INFORMATION ON SEQ ID NO. 56:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1636 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual

## (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

(A) ORGANISM: HUMAN  
(C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 56:

cttgaatgaa gctgacaccca aagaaccgcgg gaagagcttg ggcggaaagc agggaaaggga 60  
 agcgctcgag ttggaaagga accgctgctg ctggccgaac tcaagcccg ggcggccac 120  
 cagtttattt ggaagtcagg ctgtgaaacc tggagcgtcg ctttctcccc agatggctcc 180  
 tgggttgcgtt ggtctcaagg acactgcata tcggaaactga tccccctggcc gttggaggag 240  
 cagttcatcc ctaaaagggtt tgaagccaaa agccgaagta gcaaaaatgaa gacgaaagg 300  
 cggggcagcc caaaaagagaa gacgctggac tgggtcaga ttgtctgggg gctggcccttc 360  
 agcccggtgc cttccccacc cagcaggaaag ctctggcaca gccaccacc ccaagtgc 420  
 gatgtctttt gcttgggttct tgctacggga ctcaacatg ggcagatcaa gatctggag 480  
 gtgcagacag ggcttcctgtt tttgaatctt tccggccacc aagatgtcg gggatctg 540  
 agcttcacac ccagtggcag tttgattttg gtctcccggt cacgggataa gactttcgc 600  
 atctgggacc tgaataaaca cggtaaaacag attcaagtgt tattcggggcca cctgcagtgg 660  
 gtttactgct gttccatctc cccagactgc agcatgtgt gctctgcagc tggagagaag 720  
 tcggctttc tatggagcat gaggtcctac acgttaattt ggaagctaga gggccatcaa 780  
 agcaagtgtt tctttgtga ctctccccc gactctggcc tgcttgcac ggcttcttac 840  
 gataccaatg tgattatgtt ggacccctac accggcggaa ggctggggtc actccaccac 900  
 acccagggtt accccgcctt ggatgacagt gacgtccaca ttatcttact gagatctgt 960  
 tgcttccttc cagaaggctt gtaccttgc acgggtggcag atgacagact cctcaggatc 1020  
 tggggccctgg aactgaaaac tcccatgtca ttgtcttca tggatgttgc gctttgtgc 1080  
 acattttttcc cacatgggtgg agtcattgtcc acaggggacaa gagatggggca cgtccaggatc 1140  
 tggacagctc ctagggctt gtcttcactg aagcacttgc ggcggaaagc ctttgcact 1200  
 ttccctaacaat cttaccaagt cctagcactg ccaatccccca agaaaatgaa agatgttgc 1260  
 acatacagga ctttttaagc aacaccatcat cttgtgcctt tttgtacg ggtttatgtt 1320  
  
 cctgtcaaaag ggagttgtcg gaataatggg ccaaaacatct ggtcttgcac tggatgttgc 1380  
 tttttttggg attgtgata gaatgttagca aaaaaatgttccatgttca taaaatgttgc 1440  
 tttttgtctt taaatgtata caaatgttca tcaactttaa tcaatgttgc actttatattt 1500  
 aagacaattt gatacataat aaaaaattat gacaatgttcc tggggaaaaaaa aaaatgttgc 1560  
 aagatgggtga aggggtggat ggatgaggag cgtgggtgc gggggcttgc gcccgggttggg 1620  
 gaccctgtgc tgcgtt

## (2) INFORMATION ON SEQ ID NO. 57:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 460 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 57:

ccatgtgtgt atgagagaga gagagatgg gagggagagg gagtcacta gcgcataatgt 60

gcctccaggg ggctgcagat gtgtctgagg gtgagcctgg tgaaagagaa gacaaaagaa 120  
tggaatgagc taaagcagcc gcctgggtg ggaggccgag cccatgttgc tgcagcagg 180  
ggcaggagcc cagcaaggga gcctccattc ccaggactct ggagggagct gagaccatcc 240  
atgcccgcag agccctccct cacactccat cctgtccagc cctaattgtg caggtgggga 300  
aactgaggct ggaagtcac atagcaagtg actggcagag ctgggactgg aacccaacca 360  
gcctccataga ccacggttct tcccatcaat ggaatgttag agactccagc caggtgggta 420  
ccgagctcga attcgtaatc atggtcatacg ctgtttccctg

## (2) INFORMATION ON SEQ ID NO. 58:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 1049 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

- (A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 58:

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atctgatcaa gaataacctgc cctggtcact ctgcggatgt ttctgtccac ttgttcacat 60
tgaggacaa gatatccttt ttacagagg cacttggcg gtctaacaca gacaccccca 120
tgacgacatg ctggctcaca ttttgcgtt ctgcagaagt ccccccggcc gcctggacta 180
cagcagcaact ttcccgtggg ggtgcgttag ccgttgcac agagcctgga gcacictgaa 240
gtcagtgtct gtgcagggttg taccgtggct ctgcattccct caggcattaa aggtcttttg 300
ggatctacaa ttttgcgttag ttttccatgg tgagtctggg tcatactttt actgcttgat 360
aaaatgtaaa cttcacctag ttcatcttct ccaaattccca agatgtgacc ggaaaagtag 420
cctctacagg acccactagt gccgacacag agtgggtttt cttgccactg ctttgtcaca 480
ggactttgct ggagagttag gaaattccca ttacgatctc caaacacgta gcttccatac 540
aatctttctg actggcagcc ccggatataca aatccaccaa ccaaaggacc attactgaat 600
ggcttgaatt cttaaatgtga tggctcaatt tcataatctt tccccctttat tatctgtaga 660
attctggctg atgatctgtt ttttccatgg gagtctgaac acagttatcg taaattgtatg 720
tttatatcag tggatgtct atccacagca catctgcctg gatctggag cccatgagca 780
aacacttcgg ggggctgggtt ggtgcgtttt aagtgtgggt tgctccctgg tatgaaataa 840
ggcacgttgc acatgtctgt gtccacatcc agccgttagca ctgagcctgt gaaatcactt 900
aaccatcca tttctccat atcatccatgt gtaatcatcc catcaccaag aatgatgtac 960
aaaaaaccgtt cagggccaaa gaggcgttgc cttccatgt gctttctgtt gaggatgtca 1020
acttcaagaa agactctggc tggtctcaa

```

(2) INFORMATION ON SEQ ID NO. 59:

(i) SEQUENCE CHARACTERISTIC:

- (A) LENGTH: 747 base pairs
- (B) TYPE: Nucleic acid
- (C) STRAND: individual
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Partial cDNAs produced from individual ESTs by assembling and editing

(iii) HYPOTHETICAL: NO

(iii) ANTI-SENSE: NO

(vi) ORIGIN:

- (A) ORGANISM: HUMAN
- (C) ORGAN:

(vii) OTHER ORIGIN:

(A) LIBRARY: cDNA library

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 59:

tttttcaaata cacatataggc ttctttgacc ccatcaaata actttattca cacaaacgtc 60  
ccttaattta caaaggctca gtcattcata cacattaggg gatccacagt gttcaaggaa 120  
cttaaatata atgtatcata ccaacccaag taaaccaagt acaaaaaata ttcataaaa 180  
gttgttcaca cgtaggtcct agattaccag cttctgtgca aaaaaaggaa atgaagaaaa 240  
atagatttat taactagtat tggaaactaa ctttgcct ggcttaaaac ctccctcacg 300  
ctcgtctgtc ccacacaaat gtttaagaag tcactgcaat gtactccccg gctctgatga 360  
aaagaagccc ctggcacaaa agattccagt gcccctgaag aggctccctt cctcctgtgg 420  
gctctcctag aaaaccagcg ggacggcctc cctgctgata ccgtctataa ccttaggggg 480  
ccctcgggca ggcaacggca gtggactcat ctcggtgatg gctgttagatg ctaacactgg 540  
ccaattcaat gccacaccta ctggttaccc tttgagggca tttctccaga cagaagcccc 600  
ttgaagccta ggtagggcag gatcagagat acacccgtgt ttgtctcgaa gggctccaca 660  
gcccagtacg acatgcttgc agaagtagta tctctggact tctgcctcca gtcgaccggc 720  
cgcgaattta gtagtaatag cggccgc